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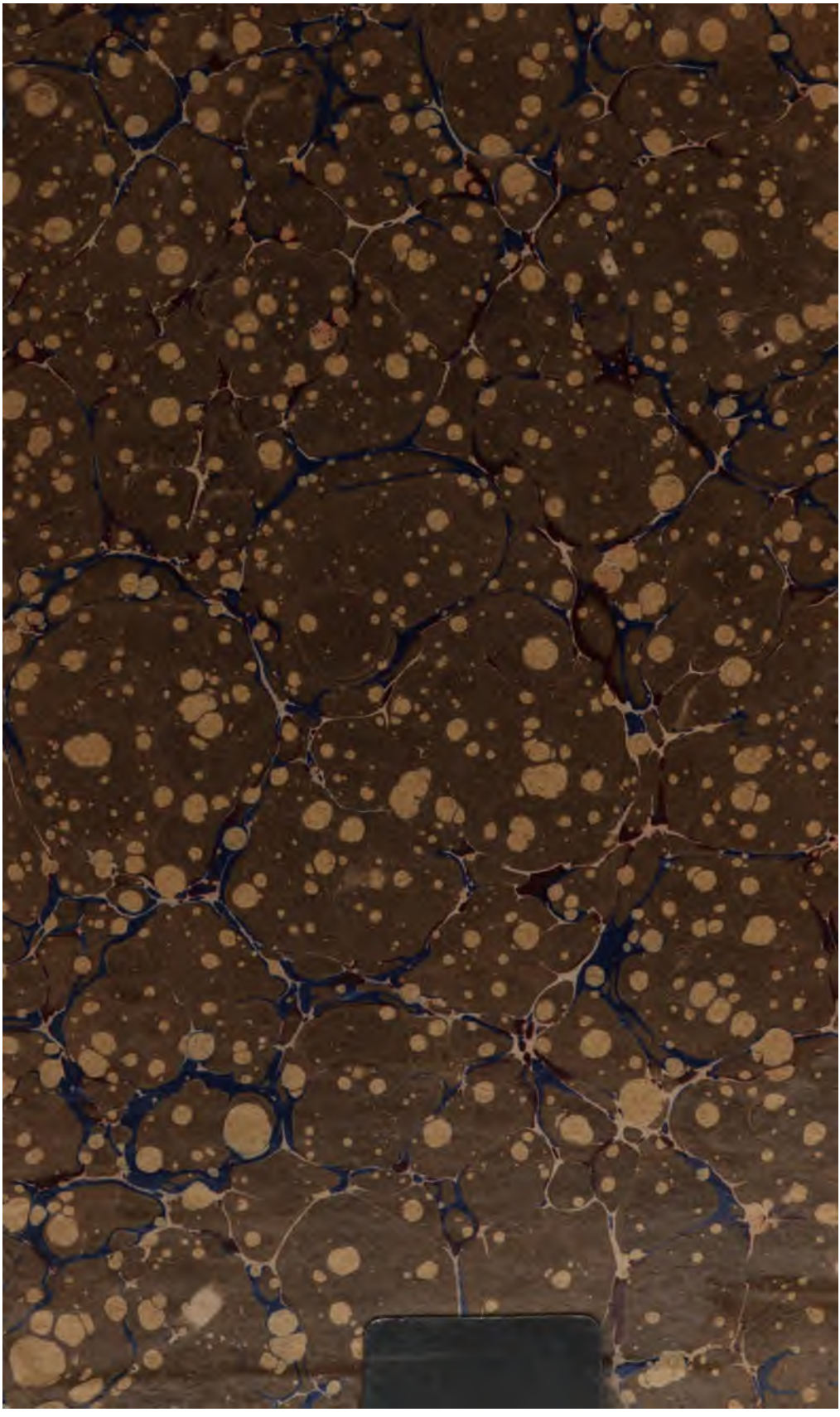

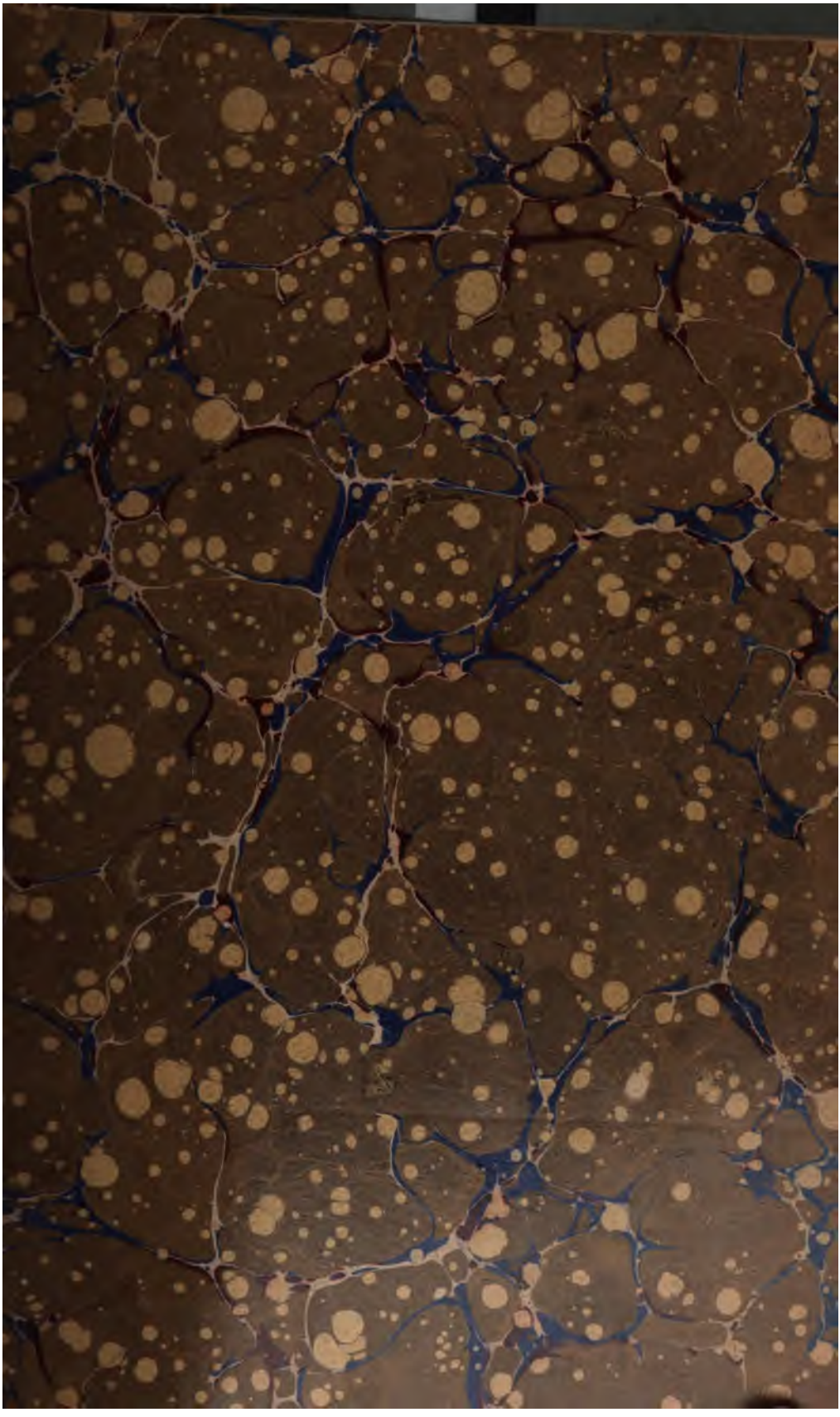

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THE MONIST

A QUARTERLY MAGAZINE

DEVOTED TO THE PHILOSOPHY OF SCIENCE

VOLUME XVII.

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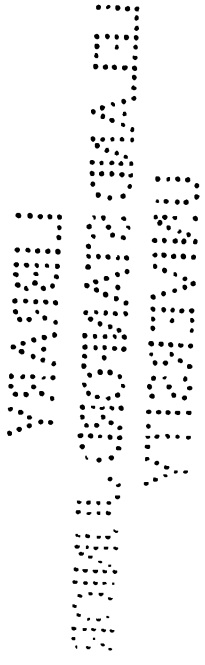

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THE MONIST

THE BUDDHIST CONCEPTION OF DEATH.[1]

OCCIDENTAL scholars frequently represent the ideal of Buddhism as an escape from life and a passing into eternal stillness; but this is an error, for Buddhists do not shun struggle and warfare. If a cause is worthy they will not hesitate to lay down their lives for it, and they will do so again and again in this as well as in future incarnations.

The idea of future incarnations may startle the Western reader; but we Buddhists believe that men appear upon this earth over and again and will not rest until they have gained the end, that is, until they have attained their ideal of life; for lives continue to prevail. It is a feature peculiar to our faith which appeals most powerfully to the Japanese imagination, that man's life is not limited to this existence only, and that if he thinks, feels, and acts truthfully, nobly, virtuously, unselfishly, he will live forever in these thoughts, sentiments, and works; for anything good, beautiful and true is in accordance with the reason of existence, and is destined to have a life eternal. This is the Buddhist conception of immortality.

When, during the war of independence, an American was caught by the British soldiers and condemned to be hanged as a spy, he exclaimed: "It is a pity that I have only one life to sacrifice for my country." Pity, indeed, it was that

[1] Translated by. D. T. Suzuki from the original Japanese manuscript.

Nathan Hale did not know the truth that, from the example he set, there have arisen many patriotic minds inspired with the same sentiment. He did not die, he did not vanish into an unknown region; but he is living a life eternal, he is being born generation after generation, not only in his own country, but also in my country, and in other countries, and in fact everywhere all over the three thousand worlds.

In this respect Masashigé, a Buddhist general still worshiped in Japan as the type of loyalty, had a decided advantage over Christian heroes. He lived about six hundred years ago, and his virtues were not fully appreciated during his life; but when he died he imprinted his immortal soul on the pages of Japanese history. When the Emperor sent him once against the invading army which greatly outnumbered his forces and was led by a very able general, Masashigé had his own plan of making a stand against odds; but some ignorant court favorite succeeded in having the hero's proposition set aside, and by his sovereign's command he was thereby compelled to fight a losing battle. There was nothing for him to do but to check the advance of the enemy as long as possible, so that the Emperor could find time enough to make a safe escape from the capital. Having fought most gallantly, and borne bravely the furious attacks of the enemy, he was finally outnumbered and when, covered with wounds, he saw that further resistance was useless, he gathered his commanding officers around him, bade them farewell, and made this solemn utterance: "I pray that I be born seven times on this earth and crush all the enemies of our Imperial House." Thereupon he drew his dagger to put an end to his present existence, and his officers did the same.

This outlook into future incarnations, which seems to possess no meaning for Christians, makes a very profound impression upon us Buddhists. It seems to be pregnant with

a great religious significance. It implies a continuance of our personal existence in its individuality. Masashigé meant that his work should be continued by worshipers or imitators who would be inspired by his noble example. And most certainly did he find a legion of successors in the loyal and patriotic soldiers and sailors who have died in former wars and also in this recent war with Russia. They all are incarnations of our most beloved hero-general Masashigé. For was he not leading in spirit all these soldiers to the realization of the work he once planned? Can we say that the hero breathed his last when he fought his losing battle some six hundred years ago, while his soul is still living in the heart of every patriotic and loyal citizen of Japan?

When the late commander Hirosé went to blockade the entrance of Port Arthur, he was inspired by the same sentiment which he expressed in his swan song. He was conscious of the immortality of the work to which his incarnation was devoted, and this is expressed in the verse that was to be his last utterance:

> "Yea, seven lives for my loved land!
> I gladly die at its command.
> My heart is firm; I must prevail;
> I smile while calmly forth I sail."

Has not Masashigé's soul found a true expression in the consciousness of this brave patriot? For otherwise he could not have enjoyed that serenity which characterized him in the moment of danger and in the face of death.

Some have explained the bold courage of the Japanese soldier as fatalism; but clear thinkers will not see in it a passive resignation, but rather a hopeful consummation of existence in men who are convinced of the final triumph of good over evil, and the calm assurance that the individual lives as long as he identifies himself with a noble thought, worthy work, exalted sentiment, uplifting im-

pulse, in short, with anything that cements the brotherly union of all mankind. Those who are accustomed to look at things from the individualistic point of view may not understand very clearly what I endeavor to explain; but the fact is that however tenacious we may cling to our individual existences, we are utterly helpless when that power which comprehends everything stands against our selfish desires. There is nothing left to us but to submit meekly to its eternal ordinance and to let it work out its own purpose regardless of ourselves. When Schleiermacher defines religion as a feeling of absolute dependence, he has rightly laid his hand on that indefinable and unclear longing which lurks in the dark recesses of every soul—a vague feeling which intuitively becomes aware of the weakness of the individual as such, but which possesses an immense strength as soon as the individual identifies himself with a supra-individual power. This is evidently neither fatalistic nor fantastic.

All sincere Buddhists are firmly convinced of the truth of non-egoism, and they do not think that the value of an individual as such is ultimate. On account of this, they are not at all disturbed at the moment of death; they calmly meet the end of life and let the world-destiny accomplish the purpose it may have in view. This emancipation from the individualistic limitations seems to have largely contributed to the perfection of the Japanese military culture known as *Bushido*. Old Japanese soldiers, nobles, and men of letters, therefore, displayed an almost gay cheerfulness even in the most critical moments of life, and they faced death unflinchingly, sometimes even in mirth. This buoyancy in which death is held in contempt stands in a marked contrast to the pious, prayerful attitude of the Christians, who look forward to their dying moments in a spirit of contrite penitence.

Ota Dokwan, a great Japanese statesman and general

of some four hundred years ago, was assassinated in his own castle by a band of spies sent by an enemy. They found him unarmed and stabbed him; and when he fell to the ground, the assassins before finishing their cowardly work asked what the general had to say before he bade farewell to this world; whereupon Dokwan calmly answered:

"To quit life which is sweet to me
Would truly a great hardship be,
Had I not come to the conclusion
That thought of self is an illusion."

Finding peace of heart in this solution of life, Buddhists do not fear death; whatever may be their social positions, they are ever ready to lay down their lives for a higher cause which demands the sacrifice. They know that their present individual existences will come to an end, but they know at the same time that spiritually they live forever; and this higher conception of life together with a nobler interpretation of death has been contributed to Japanese culture by Buddhism.

SOYEN SHAKU.

KAMAKURA, JAPAN.

EVOLUTION AND MUTATION.

IN the beginning of the last century Lamarck founded the theory of a common descent for all living beings. It afforded him the only possible means of explaining systematic affinity. He assumed that the influence of the environment was capable of changing the characters of the organisms, and of fitting them for their life-conditions. His evidence, however, was very scanty and therefore he failed in convincing his contemporaries.

Half a century afterward Darwin brought together such an overwhelming mass of evidence that opposition had to give in. His main point was one of comparative investigation. At his time it was universally assumed that species had been created as such, but that subspecies and varieties had been derived from them according to natural laws. Darwin proved that no such distinction between species and subspecies exists. Their marks are of the same nature, and if a natural origin is assumed for one group, it must be conceded for the other, too. The same holds good for genera and families, and even for the higher divisions of the system.

Moreover, Darwin showed that the sequence of the appearance of organisms during geological times finds a natural explanation on the assumption of the theory of descent, and that the geographical distribution of animals and plants is exactly as we should expect it to be if their common origin were the main factor in assigning them their special domains.

These broad proofs of the theory of evolution are quite independent of the question by which means and in what way new species are produced from the existing ones. This question, however, appeals more directly to the imagination and Darwin collected all the evidence concerning it which he could find. The rapid victory gained by his views has been due mainly to his discussion of this minor point.

Direct observations concerning the first appearance of species in nature were not at hand. In agriculture and in horticulture, however, numerous observations had been made, and for a number of races and varieties the origin was historically known. Distinct methods were in use to guide these changes and to produce varieties which would comply with the demands of practice. The grand principle of all these methods was selection. Selection means guiding the changes in the specific characters of organisms by cutting off all those which are changing in undesirable ways, and reserving for reproduction only those which differ advantageously from the average.

Darwin proved that the origin of species in nature must be the same phenomenon as the origin of races and varieties in culture. He showed that in nature an analogous process of selection is steadily active. More seeds are produced and more children are born than can possibly survive, and the decision as to which are to live and which must die, depends, on one side, on the life-conditions and, on the other, on the distinctive qualities of the competing individuals. Of course, in the single instances survival depends mainly on chance, but in the long run the different chances may be assumed to annul each other's influence, and the decision falls to individual excellences and life-conditions. In this way the latter can be said to make a choice of the individuals best fitted for the local conditions and this is what is now universally known as *the principle of natural selection.* It guides evolution, keeping it in the

useful ways, and destroys all that try to diverge in opposite directions.

The theory of common descent is Darwin's theory, since it has been founded by him on so broad a basis of facts as to insure almost universal acceptance. The theory of natural selection is one of the means by which this position has been reached. It is the application of the breeding practice to the phenomena of nature at large. Darwin's theory is often designated as the theory of natural selection. This is, however, not the same as the theory of descent. The idea of descent with modification, which now is the basis of all evolutionary science, is quite independent of the question as to how, in the single instances, the change of one species into another has actually taken place. The theory of descent remains unshaken even if our conception concerning the mode of descent should prove to be in need of revision.

Such a revision has become necessary by the gradual development of the study of variability. Darwin has demonstrated that all the individuals of a given species differ from one another to some extent, and that many of these differences increase or lessen their chances of survival. A struggle for life ensues and, sooner or later, the unfit individuals succumb, thereby leaving the average of the species changed to some slight degree. Differences between isolated local races afford the means of studying the efficiency of this process of variability and selection. The question arises, however, as to how far this variability may go under the influence of this guidance. Is it limited or unlimited? Can it proceed during centuries and in the same direction, augmenting the differences to any extent, or is it bound by its original average condition, without being able to diverge far from it? Can it produce new characters and new qualities or is it limited to changes of degree in those that already exist? To all

these and many other questions, an answer could not be given at the time of Darwin, the evidence being too incomplete. It was, however, necessary to make a decision of some kind, and thus it was universally assumed that the changes by which species originate are slow, almost invisible, and may accumulate, in the lapse of time, to any degree. All of the characters of living organisms were simply assumed to be due to this slow process of gradual evolution guided by natural selection.

Here, however, a first difficulty arose. We do not observe actual specific changes in nature. To meet this objection Darwin assumed the changes to be so slow as to be invisible to us. Even the life-time of a man would not be sufficient to control them. By this supposition the evolution of a flower or a seed or of highly differentiated organs (such as the leaves of insectivorous plants) would require an enormous time. From this a calculation could be made as to the time required for the whole range of evolution of the vegetable and animal kingdoms. The result was that many thousands of millions of years were considered to be the smallest amount that would account for the development of life on earth from the very first beginning until the appearance of mankind.

Physicists and astronomers have objected to this conclusion. The objection has been brought forward from the time when Darwin published his calculation. It has never relented and has often threatened to impair the whole theory of descent. The results of physical and astronomical calculations concerning the age of life on this earth differ so widely from the demands made by the theory of slow evolution as to be considered incompatible with them. The deductions made by Lord Kelvin and others, from the central heat of the earth, from the rate of the production of the calcareous deposits, from the increase of the amount of salt in the water of the seas and from various other

sources, indicate an age for the inhabitable surface of the earth of between twenty and forty millions of years only. This large discrepancy has always been a weapon in the hands of the opponents of the evolutionary idea, and there can be no doubt that it proves that the current view of extremely slow and almost invisible changes must be abandoned.

Shortly after the publication of Darwin's *Origin of Species,* the Belgian anthropologist Quetelet submitted the variability in measurement of the different parts of the human body to a statistical investigation. He discovered that this kind of variability follows distinct laws and that these laws agree, in the main, with the law of probability. Small divergences from the average are numerous, larger discrepancies are rare, and the rarer, the larger they are. Variability is thereby limited, and is subject to a return to the average condition. It may be moved from this average, to some extent, by a change in the outward conditions or by a repeated selection in one direction; but, as soon as these causes and this selection cease to work, a return to the average is unavoidable. Variability may augment or diminish the qualities; it is linear, consisting of changes along a simple line, some being positive and others negative, but it does not strike into new directions. It is no source of new qualities. The phenomena which are controlled by this law and which are bound to such narrow limits cannot be a basis for the explanation of the origin of species. It governs quantities and degrees of qualities, but not the qualities themselves. Species, however, are not, in the main, distinguished from their allies by quantities or by degrees—their very qualities may differ.

From this discussion it may be seen that the slow and gradual changes of ordinary variability and the production of new characters are not of the same order. Varia-

bility, in the ordinary sense of the word, is a broad conception. It must be subdivided for the purpose of scientific investigation. The phenomena that follow Quetelet's law are now considered as one group, which is called fluctuating variability or fluctuation, since the individual qualities fluctuate around their average. The processes by which new qualities are produced must be studied separately. Under the assumption that these processes are neither slow nor invisible, but consist in leaps and jumps such as are popularly indicated by the name of sports, they are now called mutations, and this great subdivision of the phenomena of variability is designated, in consequence thereof, as mutability.

Darwin was well aware of the existence of different cases of variability, and of the possibility of their bearing on the theory of evolution. He considered the assumption of an origin of species in nature by leaps and sports, such as were observed to occur among horticultural plants. He pointed out that the affinity of closely allied species can be explained on this assumption as well as by slow changes. If we consider all the varieties and subspecies of apples, or beets, or of one of the cereals, and assume thousands of years for their production, the changes may have been brought about by rare sports as well as by long continued changes: the effect, at the present time, would be the same. Darwin agreed that this possibility could not be denied and that it was a very weak point in his hypothesis of slow evolution.

The mutations must not be assumed to be considerable changes. From a study of the differences among small species we may form some conclusion as to their probable size. Common observation shows the difference between allied species, ordinarily, to be quite striking; but a little discussion and a closer inspection will easily prove that, in such cases, the differences are due to more than one,

and often to numerous, characters. In groups, (such as brambles, roses, buttercups, willows and many others) where large numbers of species are closely allied, the differences between any two of them become smaller and the number of distinct forms increasing, the distinction, in the end, may be reduced to one single differential mark for each two neighboring types. Such differences must be assumed to be produced each by a single mutation. By this means the significance of the mutations may best be judged, and whenever species differ from their nearest allies in a higher degree, the inference is allowed that they have been originated by more than one mutation.

Since the publication of Darwin's theory, the probability of such sudden changes playing an important part in the evolution of species has always found some support. Of late, the evidence has increased in this direction, especially under the influence of Cope. Discontinuous evolution has been defended among palæontologists by Dollo, among zoölogists by Bateson and among botanists by Korshinsky. This Russian author compiled the history of a large number of varieties from the widely scattered horticultural literature and showed that, in almost all cases where the history of the origin of a variety was recorded, it originated suddenly. Many other varieties, especially among trees and shrubs, have been discovered as such in the field, and although their origin is not historically known, the constant absence of intermediates pleads vigorously for the explanation of their differential qualities by mutation.

The conception of mutations agrees with the old view of the constancy of species. This theory assumes that each species has its birth, its life-time and its death even as an individual, and that throughout its life it remains one and the same. Thus it is only natural that wild species are almost always observed to be constant, since by

a mutation they do not change themselves but simply produce a new type. This is allied to its ancestor as a branch is to a tree, the stem continuing its own growth, no matter how many branches it produces. Just so a species may produce quite a number of new forms without being changed itself in the least thereby. Among palæontologists Scott has given forth this same view. According to his conception, species are derived from one another by small shocks. Each shock caused the old limits to be transgressed; but, after it, the new species remained unchanged until, perhaps after centuries, a new shock made it transgress its new limits. Each single type (be it species, subspecies or variety) is thus wholly constant from its first appearance and until the time it disappears, either after, or without, the production of daughter-species.

On the ground of the mutation-theory there is a struggle for life among species as well as among individuals. There is selection, also, between competing species and between the individuals of the same species: the fittest will survive,—but this holds good for species as well as for individuals. As to individuals, natural selection may, to some extent, cause a divergence from the average type. But among species natural selection is the most potent factor, since it eliminates some and thereby protects and favors others. Thus we come to the conclusion that natural selection is as active as Darwin assumed it to be, and is as pre-eminent a factor in the process of evolution. It causes the survival of the fittest; but it is not the survival of the fittest individuals, but that of the fittest species, by which it guides the development of the animal and vegetable kingdoms.

Resuming the main points of this discussion, we may sketch the origin of species, according to the theory of mutation, in the following manner. Species are derived from other species by means of sudden small changes which, in

some instances, may be scarcely perceptible to the inexperienced eye. From their first appearance they are uniform and constant, when propagated by seed; they are not connected with the parent species by intermediates and have no period of slow development before they reach the full display of their characters. They do not always arise, but only from time to time. A parent-species may produce its offspring separately at intervals or in larger numbers during distinct mutating periods. After this production, the old species is still the same as it was before and it subsists in the midst of its children. New forms are produced by the old either in one, or a few, or in numerous individuals; in the latter case, the chance of survival is evidently enhanced. Some young species will be better fitted for their life-conditions than others, and the struggle for life will induce a selection among them by which the fittest survive. Even as the new species are produced locally and as the effect of local causes, the struggle for life and natural selection decide concerning the survival according to the local conditions. These conditions thus have a twofold significance for the development of the pedigree of the main groups of plants and animals, but it is probable that they determine the lines of progress chiefly by their selective activity.

The main arguments in the discussion of the production of species by slow changes or by mutations were taken by Darwin from the experience of agricultural and horticultural breeders. Therefore it is desirable to inquire into their real significance. Do they support the one or the other view? Darwin assumed that they gave proof of slow changes, and took his arguments mainly from the agricultural side. In horticulture, however, as we have seen in discussing Korshinsky's work, the probability is on the other side. In my experiments on mutability I have shown that it is possible to repeat and control the origin

of horticultural and analogous varieties under strict experimental precautions, and that the full proof may be given that they originate at once and not by a slow process of changes. They may, in the first instance, appear with the full display of their average character, or only with a small indication of it as an extreme variant of its fluctuation, but in the latter case the average is often reached after one more generation.

I observed the origin of the peloric toadflax and of a double marigold and produced, almost artificially, the twisted variety of a Dracocephalum.

In the case of the toadflax, *Linaria vulgaris peloria*, the change came suddenly, and more or less unsuspectedly, after a culture of about eight years. The ordinary form produces, from time to time, some few five-spurred, regular or peloric flowers. At once an individual arose which had such flowers only. The next year the mutation was repeated. The seeds of the mutated individuals reproduced the new variety almost exclusively, and each plant of it had peloric flowers only. No intermediates were observed, neither in the number of the spurs of the flower, nor in the number of peloric flowers on the plants. It was as sudden a change as any horticultural sport, but its ancestry had been purely fertilized and carefully recorded so as to leave no doubt concerning the real nature of the mutation.

The double variety of the corn-marigold (*Chrysanthemum segetum*) arose in my garden in a culture in which I was increasing the number of ray-florets by continuous selection. During four years I had succeeded in increasing this number to about sixty on each head, starting from the cultivated variety with an average of twenty-one. All the ray-florets, however, belonged to the outer rows of the heads, as in the original variety. At once a plant arose which produced some few ligulate florets in the midst of the disc. This indicated the production of a double

race. When the seeds of this mutating individual were sown the next year, they yielded a uniformly double group; and from this time the new variety remained constant.

The *Dracocephalum moldavicum* is an annual garden-plant belonging to a genus in which Morren has described some beautifully twisted specimens. I succeeded in procuring such a specimen in this species by cultivating a race of it during some few years, selecting the specimens which showed a marked tendency toward variation in the arrangement of their leaves. The twisting appeared at once, but the race has not been continued.

All these, and many other, experiments have been conducted under conditions which allowed of a close scientific study. They confirm the common experience of the horticultural breeder in stating the suddenness of the changes and the immediate production of distinct races. They show us the way in which analogous changes may have occurred in nature and make it probable that sudden changes are, at least, an important factor in the evolution of the vegetable kingdom.

With agricultural crops my experiments have been too rare to give a definite result. The German breeders assumed, as a rule, that they produced their races at will and by a process of slow variability and repeated selection. It is mainly upon this conviction that Darwin has based his conception of an analogous slow improvement of species in nature. This German method has, however, been submitted to a severe criticism by Dr. Nilsson, the Director of the Swedish Agricultural Experiment Station at Svalöf. His pedigree cultures have shown that the idea of a slow accumulation of characters by repeated selection is due to incorrect observations and to the use of untrustworthy methods. According to his experiments, changes occur in agricultural plants as suddenly as in horticultural species; there is no essential difference between them in this re-

spect. By these discoveries the main support of the theory of slow and gradual evolution is broken down and the analogy between artificial and natural production of species comes to plead wholly for the theory of mutation.

The principle of mutations is conducive to the assumption of distinct units in the characters of plants and animals. Even as chemistry has reached its present high development chiefly through the assumption of atoms and molecules as definite units, the qualities of which would be measurable and could be expressed in figures, in the same way systematic botany and the allied comparative studies are in need of a basis for measurement and calculations. The determination of the degree of affinity now largely depends upon vague estimates and personal views; while, on the basis of the theory of mutations, the relationship is measured by the number of the mutations which have made the forms under consideration different from their common ancestors. The mutations themselves have evidently occurred in previous times and cannot be counted now. But if it were possible to count their products, the characters, the same aim could be reached.

The study of these unit-characters may be undertaken in three different ways: first, by the production of hybrids; secondly, by the investigation of associated characters; and, in the third place, by the direct observation of mutations producing such units. In hybrids the characters of the parents may be combined in different ways, but the unit-characters cannot be split or divided. This follows directly from their definition. Thus the different combinations may lead to the distinction of the constituents of the mixture. The experiments of Luther Burbank afford a sufficient source of evidence to discuss this question and are well-deserving of a separate treatment. On the other hand, their methods and scientific results are the same as those of the European horticultural breeders.

The association of characters is often called correlation. It may be an accidental or a normal coincidence of character-units. But more often the same simple character manifests itself in different parts of the organism (as, for instance, in the color of flowers, berries, seeds and foliage) and thereby affords a means of investigating it. Of late, such associations have become of high importance, since selection may be guided by them. Especially in the isolation of new varieties of cereals has this use proven very valuable.

For the direct observation of the process of mutating, the Evening Primrose of Lamarck affords at present an unequaled opportunity. It produces numerous mutants, and does so in every generation, and almost any sample of pure seed may be used for this study. This species was described by Lamarck from specimens of the botanical garden at Paris, a century ago. It seems to have since been lost. It was re-introduced into European garden-culture about the middle of the last century, by a nurseryman in London who received the seed without name and in a mixed packet, cultivated and multiplied it and sold it to the leading firms of the continent. All the strains derived from this source show the same phenomena of mutability, as far as my experiments go. Where the species is growing in America in the wild condition, is not known at present, and so it is impossible to decide whether it has acquired the habit of mutating in that condition or upon its introduction into European culture.

Twenty years ago, I found this species on a waste field near Hilversum, in Holland, where it had escaped from cultivation and was rapidly multiplying. Here it had produced two new and distinct varieties which, up to the present time, have not been collected or observed elsewhere. One of them had smooth leaves, lacking the bubbles of the ordinary form; it was a fine type with narrower

leaves and petals, the latter often becoming ovate instead of cordate. The other had very short styles, the stigma reaching only the mouth of the flower-tube, instead of being lifted up above the anthers. Its ovary is only partly inferior, and it ripens only very few seeds in its capsules which remain small. It has, moreover, some associated characters in its foliage by which it may be recognized before the flowering period. In my cultures, both these varieties were found to be constant and pure from seed. Some further mutations have been produced on the same field, but since they were also produced in my experiment garden, I shall not here mention them separately.

In the year 1886 I collected some seed from the normal plants of this field and sowed them in my garden, the next spring. This culture at once gave a new mutation wholly unobserved until that time. Three individuals diverged from the average, and all three in the same way. They constituted a new type which has been called Oenothera lata or the broad-leaved evening primrose. Its leaves have rounded tips, its stems are weak and bending and scarcely reach half the size of those of Lamarck's primrose. It has thick flower-buds and produces flowers, the petals of which often cannot completely flatten themselves. The anthers are barren of pollen, dry and twisted. Its ovary, however, is normal and can easily be fertilized by the pollen of the parent species. In doing so the next generation is, of course, of hybrid origin; but it does not produce intermediates but consists of some typical Oenothera lata and some normal Oenothera Lamarckiana. By repeating the cross the lata-type may be kept indefinitely, occurring in about the same numerical proportion in each generation.

Starting from these mutations, I began a regular scientific pedigree-culture of Lamarck's evening-primrose, fertilizing the flowers artificially with their own pollen, pro-

tecting them from the visits of insects by paper bags and sowing, each year, the seeds of some few normal individuals of the race. This pedigree embraces, now, about a dozen generations, the first few of which were biennial, but the later annual. From this stock of normal plants it has regularly repeated its first mutation, producing some latas in almost every generation. The number of these mutants was, on the average, about 1½ per cent., the mutants themselves being always alike.

Moreover, my pedigree-culture has produced quite a number of other mutants. The most frequent among them is a dwarfish variety, the first flowers of which open when the stem is only some few inches high. It is called Oenothera nanella and occurs as frequently as the Oenothera lata. It is completely fertile and produces an abundance of seeds, all of which give the same dwarf type, without ever reverting to the high stature of the parent species. I have cultivated these dwarfs during five and more generations and have found them true to their type.

The first generations of my pedigree-culture had to meet with all the difficulties of a new experiment with unknown and partly unsuspected results. Accordingly, they yielded only a small number of mutants. As soon as the method had been elaborated, this number rapidly increased. In the spring of 1895 I sowed seed enough to have about 14,000 young seedling plants, which I cultivated until they clearly showed whether they had mutated or not. The mutating individuals were then isolated and grown under very favorable conditions, but of the normal plants the larger part were destroyed. All in all, I isolated 60 dwarfs and 73 lata and five wholly different new types. Two of them were rare, one having been found only in one (O. gigas) and the other in two individuals (O. leptocarpa). Two others were less rare, the rubrinervis appearing in eight, and the albida in fifteen specimens. The fifth was

the most frequent of them all, springing from the main stem of the Lamarckiana in 176 of the 14,000 seedlings. It was called oblonga. All these forms were purely self-fertilized and yielded uniform races without reversion to the original evening primrose of Lamarck.

With the exception of the gigas, which has not been repeated in this pedigree, all the types spring more or less regularly, in every generation, from the pure parent stock. As often as they were purely fertilized they produced constant strains which, however, did not differ from the previous races of the same name.

Besides these, quite a number of minor mutations have occurred in my cultures. Some of them died in early youth or before flowering; others were barren of pollen, or not capable of fertilization, and yielded no seeds. Some were too weak for the conditions of my garden and succumbed, sooner or later, mostly during the winter after their germination. The range of mutability of this primrose, evidently, has not been exhausted; and even during last summer a wholly new type made its appearance.

A main point in these observations is that the mutations occur suddenly, without preparation and without intermediates. Nothing indicates, on the normal plants, what their seeds will produce and there is even no means at all by which to decide beforehand whether the fruits of one individual, or one branch, will be richer than any other in the production of mutations or of some distinct mutant. The distribution of mutating seeds seems to depend simply upon chance. Nor are there intermediates. Each mutant is as good a representative of its type as its progeny will be; it does not need any special cultivation or improvement to reach the full display of its character. No half-mutants are seen, either from seed of the parent form or from seed of the first mutant itself. These sharp distinctions clearly indicate that each mutation consists

of the production of a single unit-character; because, if the characters were compound, they would split, from time to time, and be divided into their constituents. By this means a method is given of studying the expressions which the same unit-character may assume in the different organs of a plant.

The question now arises, whether it must be supposed that species in nature ordinarily originate in the same way as in the case of the evening primroses. Of course, the details of the process will be different in different cases. The number of the new types and the frequency of the mutating individuals in each will differ; sometimes they may, perhaps, be more rare and, in other instances, more crowded. Other differences there will also be. The main point is, however, that mutations occur suddenly and by leaps. One generation is sufficient to produce the whole new type. This is a manifest contrast with the prevailing conception of slow and almost invisible changes producing new species. It may shorten the geological time required for the evolution of the whole living world and bring it within the limits derived from physical and astronomical evidence. The theory of mutation satisfies these demands.

The cases observed in horticulture, the constancy of wild species, the behavior of characters in crosses, the occurrence of sharply defined small species within the ordinary species of wild plants and even of agricultural crops, and many other groups of facts, lead to the same conclusion. On the other hand, the slow change of one species into another has not, as yet, been proven in any distinct and clear case. Therefore, we may assume that the mass of the present evidence points to the conclusion that species originate laterally from other species, by sudden leaps. These leaps we call mutations.

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ZARATHUSHTRIAN ANALOGIES

IN DANIEL, REVELATIONS, AND IN SOME OTHER BOOKS OF THE OLD AND NEW TESTAMENTS.

THE supposed Zoroastrian elements in the Book of Daniel have always been considered to be very striking; but as they form a part of a whole with their predecessors and successors, they cannot be estimated altogether aside from other Exilic matter. So that the entire ancient religious literature of the Jews is brought into the question, though as a matter of course the limits of the space at my disposal here do not permit me to treat the whole of it in this section. And if Zoroastrian elements appear anywhere at all within the Jewish ancient literature, we may take it for granted that the entire mass of Zoroastrian doctrine must have exerted the most decided influence upon the developments of Jewish Exilic and of the Christian theology, for a part here proves the presence and influence of the whole.

And this at once, as I need not say, entails the gravest possible consequences in our decisions as to the vital matter of precedence or sequence in the intellectual forces here brought into consideration, as they develop themselves and become manifest in our histories of religious thought.

The objective before us, then, is to illustrate, from various points of view taken here and for the present necessarily from restricted portions of the Semitic Scriptures,

the admitted fact that the Jewish tribes entered a new intellectual world at the so-called Captivity, and then that this sphere was largely dominated by Medo-Persian as well as by Babylonian ideas, and that it was therefore to a degree Zoroastrian, and that upon this it was built up as a mass of national religious sentiment and system.

* * *

It is, however, necessary for me to interpose here an important precautionary salvo. It is this: that the Persian theology with which we are here called upon to deal, is, if we must judge from its surviving documents, divisible into two branches or schools: the Median, the more thoroughly Zoroastrian as represented by the Zend-Avesta, and the Southern school of Persepolis as represented by the Achæmenian Inscriptions. It is of course possible that these two portions of the Mazda-worship interest may not really have differed from each other as much as their now surviving documents would seem to indicate; while their close relation in spite of all conceivable divergence is not for a moment to be contested, for they have much that is essential in common; and they must each be considered as at times expressing but one and the same phase of religious conception; but still it is safer to form our judgments from these actually surviving writings, particularly as each of them is of a signal character in its particular sphere.

So looked upon, it is chiefly the Median Mazda worship, that is to say, the Zoroastrian, centering in Ragha, which is here brought into bearing with the grave questions which we are discussing, rather than the Achæmenian or Daric inscriptional elements on which I here chiefly rely, and to which I here first of all refer as at once. With the two lores in view, that is to say, with that of the Exilic Pharisaism on the one side and that of the Zend-Avesta on the other, we have two occurrences of the most im-

portant possible of religious ideas that have ever been propagated, present in two religious systems brought closely into connection with each other, as I show just below, one of which, the Jewish Exilic, dominates all Western civilization; and this actual historical literary connection between them, if it be proved to our satisfaction to be a fact, cannot help but afford occasion for the deepest possible reflection and inquiry, which must also be regarded as pre-eminently interesting from several points of view.

We must first of all mention and make clear what may be called the incontestible points of literary connection between these Iranian and Semitic lores from this line of thought, corroborative particulars from other sources following in due course; for, as I have said, if anything at all approaching to a literary connection between the two centers of intelligence can be established, our case is by the very fact of it made out, with all that it involves; for Zoroastrianism is the main document of our eschatology, a fact which should be taken everywhere for granted, as the slightest examination would confirm it.* And first of all in our further procedure we have to note the general features of the situation.

* * *

The entire mass of the Medo-Persian Mazda-worship is, as we assert, brought into close association with Judaism in an unparalleled manner in the familiar passages which meet us in Chronicles, Ezra, Nehemiah, the later Isaiah, Daniel, etc., and in the entire Exilic and post-Exilic Jewish and Christian literatures, that is to say, when this mass of profoundly interesting religious detail is studied in connection with the Achæmenian inscriptions of the Persian kings whose edicts are cited in the Bible. To

*From start to finish we have everywhere in Zoroastrianism the main points of our eschatology; there was no other lore at the period of the oldest Avesta which so expressed the doctrines almost in modern terms.

speak of Exilic Jewish history is then to speak of Persian history in one of its most interesting episodes, and vice versa; for such allusions center in the superlative circumstances of the so-called Return of the Jewish Tribes and the re-establishment of their religion upon its original representative site with the to us so momentous consequences. And no statements could be stronger, as might be said, than those well-known familiar ones which are everywhere so prominent in the documents themselves, with perhaps Isaiah xliv or xlv at their head. The Persian Emperor who represented his religion (see the inscriptions) is there accepted as the "anointed of Yahveh"—an expression which carried with it the assurance of the existence of the deepest possible religious sentiment with regard to the exalted personage to whom it alludes; and this with a salvo in verse 7 which doubly accentuates the affirmatives. So much for the connection *prima facie*. But when we have said this we must proceed to mention here, although still only in a preliminary sense, some individual particulars, as a further succinct but necessary introduction of our subject, though some of these will necessarily occupy our attention again in their detail further on.

* * *

The first of them would be perhaps that truly monumental circumstance in the Medo-Persian Jewish religious history, the presence of the "Seven Spirits" of the Zend-Avesta in Job, Zechariah, Tobit and the Apocalypse. The first mentioned, the occurrence in Job, indeed lacks the mention of the number "Seven," but the "walking to and fro in the Earth" is characteristic, while in the occurrence in Tobit xii. 15 we have both the words together, and the ideas are especially clinched to the Iranian work by the mention of one of the oldest of the Gathic demons (Tobit iii. 8, 17; viii. 3) in close association with them (the seven Ameshaspends), added to which we have the Avesta city

Ragha mentioned more than once, and all in the same book.

The tale of the Book of Tobit seems indeed to be a story largely centering about the Zoroastrian capital, if we might so call the most prominent place mentioned in the Avesta: see Tobit i. 10, 14: "And I went into Media and kept ten talents of silver in trust with Gabriel the brother of Gabrias at Rases, a city in Media"; see also Tobit iv. 1; iv. 20; v. 5; vi. 9; vi. 12; ix. 2; xiv. 4.

Ragha, as we know, was so completely Zoroastrian that the very name "Zarathushtra" became a civic title there of high order, and it was even used in the superlative degree as "most Zarathushtra," totally losing the significance of its original application to the particular family of the distinguished prophet.

Kohut* also with much probability likewise found the common Persian word Khshathra, which is also the name of the third Avestic Ameshaspend, in Esther as well as in Daniel. This would of course only help to illustrate still more the close Persian relation, which we may regard as hardly contested; but with much sagacity he noticed the "uer" of Ahasuerus, which equals "vēr"; and in it he with much plausibility saw not only the Persian Khshathra—the "Ahas" having resulted, as so often in similar cases, from contraction plus the added incipient "A"—but he saw the Avestic Khshathra-vairya, the "vēr" representing this latter part of the compositum, as indeed it does also in the Pahlavi middle Persian, Khshathra and Vairya also occurring in close association even in the Gathas.† The asserted analogies between the Persian, the Jewish, and the Babylonian month-names, are also particularly significant. Not pausing upon what may be considered especially controversial in Benfey's attempted

*See his work cited below, now of course antiquated, but still suggestive.

†If indeed this recognition be not beyond dispute, it yet awakens our attention and our zeal to search for other analogies.

identifications here (see also his successors), it will be convenient to call especial attention to the signal word "Adar" (Atar), which is purely Persian, both in its literal meaning and in its here so significant application. No scholar can have failed to become aware that the word for fire, while well-nigh the most common word of its kind in the Persian, is at the same time perhaps the most sacred of its sort in that language; for the element was personified as an Angel and has a Yasht really, though not formally, devoted to it, and this in the genuine if yet later Avesta.

Zoroastrians have also been for a long time called "Fire worshipers," on account of their especial use of fire in worship, which was rather more pronounced than its adoption among the Hebrews except perhaps in the Exilic and post-Exilic times; and even here the use of the Seven Lamps to symbolize the Seven Spirits, which lingers in the Church is perhaps not so striking as the fire altars perpetually burning in the Zoroastrian temples. And the influence of the ideas which center in this "element" was so marked that an important province to the southwest of the Caspian Sea was named Azerbaigan Adharbāgān.*

It was also in connection with the names of others of the most holy concepts in Iranian thought that the word "Adar" was so prominently adopted as the name of a Parsi month,† as it is also in both the Jewish and the Assyrian; and this circumstance, though it is not at all the most incisive of the initial features, is yet one of the most convincing, and affords formidable proof of early Iranian influence upon Babylon.

* * *

As this item is so incisive in the impression which it

* The Holy Fire was not perhaps as yet personified in the Gatha, but it is still most reverently mentioned. Some Parsis have, I think, cherished the belief that the fires upon the chief altars in the Fire Temples were originally supernaturally imparted.

† As *ādar* = "fire" was a word otherwise totally unknown to the Semitic languages in this sense, the facts are peculiarly important.

makes upon us I will dwell for a moment longer upon it here.

Here is a month named "Adar" in the Babylonian, the Jewish and the Persian languages. To the Babylonian and the Hebrew, the term is wholly foreign, certainly so if it meant "fire" in Babylonian and Hebrew; but in the Iranian Medo-Persian it is one of the most common of all household terms, also emphatically sanctified for the sacrifice, and its application in Iranian to the naming of a month accentuates its distinction. To which then of the three languages, which each used it for a month, was it originally so applied?

Is it likely that the Babylonians developed out of their own speech, and as if by accident, a word which was externally identical with this Persian term, at once so common and so distinguished, and without the smallest hint from Persian usage applied it also to a month as the Iranians have done—a month being presumably as sacred an interval of time to the Babylonians as it was to the Iranians?*

Was it there used as a pure Syrian word "Adar" in a territory which may have been overrun by Persian influences at some immemorial epoch, (which is one of my present contentions), and which was at an early date soon after the first Exile actually known to have been so overrun, proving that this Iranian word may well have later crept into the earlier Hebrew texts in the ever-repeated recopying of manuscripts? Is it likely then that this term, universally used in Iranian for "fire," should have any other meaning when applied to a Syrian Deity, "fire" having universal claims to worship, an element which could not help, as we might almost say of it, becoming a god? And if the Syrian, Assyrian, or Babylonian

*See the word applied to a Syrian god in Palestine as reported not very long ago.

word meant "fire" also, its Iranian origin is certain. See also Tēbeth, an Iranian word, which is also a Semitic month name, from Avesta, *tap,* "to burn," cp. Tābistan = "summer." Not to speak of Ab as again a month of "water," nor of Tishri as Tishtrya, Tishtar, being a prominent Persian star and later Sirius, *yet also with the others applied to a Persian month;* see even Khisleu which might easily recall Khashathra as contracted, a Parsi month, as "s"="t," "th," and "l" is easy for "r," etc. This point as regards Adar, we should say in passing, controls this situation here. If one Babylonian month name was Iranian, it is not sound criticism for us to hold to an isolated occurrence; "many or none" should be our principle. Even if, conceivably, the Iranian month names, all intensely native to Medo-Persian as they are, were later taken over from Babylon after having been previously adapted there from Iran in other applications—even upon the supposition that they, while wholly Iranian, had never before as yet been used in Iran as month names till they had been first so used in Babylon—notwithstanding this so singular presupposition, the fact would remain as clearly proved that these Iranian words had singular power in Babylon at an extremely early date. These considerations taken all together almost make us credit the old opinions of a once paramount semi-Iranian influence in Babylon or in pre-Babylonian times as being intimately associated with the intellectual elements of Akad and Sumer.* And this, as we should never forget, was also *a priori* more than probable; for Iran could not have developed even to the position occupied by the first Achæmenid except during the course of some centuries and without having made its energetic influence often felt upon neighboring states.

There is one other serious point here which I would

* Look at Apsu as plain Iranian; Aps with the Semitic nominative suffix. See also Patesi, the name of an Akkadian ruler, Avesta Paitish, etc.

introduce as if in parentheses, though it may not seem to be immediately relevant; it is this. Some advanced scholars seem never to have become at all aware of such as fact as that all the Persian Ameshaspends with many of their satellites, whose names are used for the months and the days of the months, were likewise *Vedic*, though scattered and not numbered six or seven in the RIK; nor yet at all applied in the same way to the calendar. And this all the more connects the entire body of Iranian religious thought with the great southeastern Indian systems rather than with the southwestern Babylonian, for the Vedic is and was a veritable fellow-branch with the Iranian in one and the same vast primeval faith. But this circumstance also imparts immensely greater solidity to the entire structure of the Iranian religious system, showing it to possess a predominant objectivity, which together with its incisive clearness naturally impressed itself upon its neighbor the Assyrian. As we shall be obliged later on to bring in facts which postdate the New Testament and which yet exercise a very important influence upon the issues of this discussoin, (see below), we must continue on our preliminary remarks one step further here and refer to some post-Christian elements.

Much additional information of an interior character has been collected by Kohut out of the various early sections of the Talmud, some of it dating so early as before A. D. 226. Prominent among these particulars, and as in analogy with the general Persian atmosphere of the Exile period noted above, would be the favored condition of the Jews under the Parthian Arsacids, which would be available as a point so far back, let us say, as 150 A. D. at least;† and perhaps the still more incisive manifestation of disfavor under the Sasanids, from 226 A. D. on, may be

†Their political representative, the Exile arch, ranked fourth after the sovereign. See Kohut's citation.

also highly valued for our purpose, for persecution sometimes‡ brings out details of intellectual connection more sharply even than sympathetic treatment.* Next to this and as again parallel to what is above cited, Kohut, with a very fair degree of probability indeed, sees Haurvatāt and Ameretatāt in later but still early portions of the Talmud; while the Cinvat Bridge is clearly mentioned somewhere also, though here I can quote only from memory, the very striking particulars of Yasht XXII appear. And what shall we say to the somewhat late but most certain existence of Avesta Būt, Mūsh, and the Ashemaogha? Then still later we have also Talmudic Mittron possibly for Mithra, ur-iel for Hvare-nah, etc., etc.† If these items, thus as it were hastily inserted before our more extended discussion, possess any validity at all, then they should already produce an incipient conviction in our minds and so at once begin to make us believe all the acutely interesting and solemn facts involved in the partially approximate identity of the Persian and Israelitish Exilic lores.

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‡ If not as the general rule.

* At the festivals especially held to the Fire the Persian authorities entered the dwellings of the Jews, and put out all the lights; and so at the festivals in honor of the holy waters they deprived them of its use. See Kohut's citations.

† Aspiration comes and goes; see Kohut everywhere, "ur-" might well be "Hur"—and this easily "Hvar." Those who criticize Kohut too freely should remember that one has to be a critic to criticize a critic. Much that is sagacious is utterly lost upon non-experts. See "Jüdische Angelologie," *Abhandlungen für die Kunde des Morgenlandes*, Vol. IV, 1866, by A. Kohut. See also his successors, N. Soderblom, Ernst Bloken, L. H. Gray, etc.

MYTHICAL ELEMENTS IN THE SAMSON STORY.

INTRODUCTION.

SOME time ago, in connection with Mr. Evans's study of the mythical Napoleon, I made some editorial comments on myth in history, and alluded incidentally to the Biblical legend of Samson as a solar hero. I deemed this theory thoroughly established and was quite astonished to be called to account by Mr. George W. Shaw, one of our readers and contributors, and a good Hebrew scholar to boot, well versed in Bible lore.[1] I must further admit that Mr. Shaw is not isolated in his opinion, for not only Biblical encyclopædias, both German and English, but also the best secular works,[2] such as the *Encyclopaedia Britannica*, repudiate the idea that the story of Samson should be a myth. These circumstances made me reconsider my opinion, but after all, I do not feel compelled to make any radical change in my views. Having collected the evidence, I find that the case is very instructive because it throws much light on the religious development of the Bible.

Mr. Shaw's challenge is the immediate cause of the present treatise, and I am grateful to him for his protest.

[1] An article of his entitled "The Period of the Exodus" appeared in *The Monist* for April, 1906.

[2] One quotation shall suffice: "Der Versuch Samson als den phönizischen Herakles, den Sonnengott, zu erklären, scheitert an konkreten Einzelheiten und den lokalen und nationalen Motiven der Sage." Brockhaus, *Konversations-Lexikon*, Vol. XIV, p. 991.

I have devoted considerable time to a reconsideration of the problem, but to re-read the story as told in the Bible, to compare doubtful passages with the original Hebrew, to peruse critically and with care what has been written on the subject by my predecessors in this field (especially Roskoff and Steinthal), to make a résumé of the old arguments, to add some new ones which I discovered by the way, and finally to condense and rearrange the entire subject in the present essay, has been a genuine pleasure to me. I only wish that the perusal of it all will be as interesting and instructive to my readers as the writing of it was to me.

I will say at once that Mr. Shaw's position contains a truth which I do not mean to question, and which I had insisted upon from the start. An account which is decked with mythological arguments should not for that reason be regarded as absolutely unhistorical, for it is quite natural that myth enters into the fabric of history, as I have pointed out in my introduction to Mr. H. R. Evans's book on the Napoleon myth.[3] Yet, if, on the other hand, a myth has crystallized in a definite form and localized in well-known places, we must not jump to the conclusion that its historicity is well established. It is true, as Mr. Shaw remarks, that "thinkers are becoming more anxious to find history in myth," but one reason why our critics are returning to a conservative consideration of traditions after a period of hyper-criticism, is given in the counter-statement, also alluded to by Mr. Shaw, that they "detect myths in history." It is so natural for man to associate things of the same type that the deeds of a hero are told and retold with reminiscences of the mythology of his ideal, his tutelary patron saint, or god, and thus the two stories, fact and fancy, history and myth, are imperceptibly fused

[3] *The Napoleon Myth.* Chicago: The Open Court Publishing Co., 1905.

until the hero is deified and the historical tale changed into a myth.

The story of Samson is of special interest and perhaps more instructive than any other legend or fairy tale in the Old Testament; but that it is legend and not history must after all be conceded by all exegetists and higher critics, both liberal and orthodox. It seems to me out of the question that there is any one who would believe the story literally, or lay much stress on the Biblical account as inspired by the Holy Ghost. If there be any one left who is naive enough to take the old orthodox standpoint with respect to the Samson story I should, indeed, like to know how he can make his conception of God agree with the lack of dignity and decency displayed in these primitive traditions.

ROSKOFF AND STEINTHAL.

The first to devote a special investigation to the legend of Samson was Dr. Gustav Roskoff, professor of Protestant theology at the University of Vienna, who in 1860 published an essay on the Samson legend, its origin, form and significance compared with the Heracles myth,[1] and I have found him still quoted as an authority upholding the historical character of the Hebrew hero. He does so indeed, but not without serious limitations. Conservative writers who rely on him usually overlook the fact that Roskoff treats almost every single incident of the narrative as legendary and merely claims that there are "factic moments"[2] in the story. Whenever he discusses details he alludes to them as "impossibilities and incredibilities" which "in legends" are a matter of course, excusing them with such words as (page 67) "The saga does not care for the credibility of the represented events or related items." He accepts Samson's nazirdom, his heroism, and

[1] *Die Simsonssage nach ihrer Entstehung, Form und Bedeutung, und der Heracles Mythus.* Leipsic: 1860.

[2] The original reads: *faktische Momente,* page 39.

his death as "factic elements," but that is all, so far as I can see; for he says, "The legend (*Sage*) elevates the hero at the cost of details and historical by-work, and the higher he rises the more neglected are the latter" (page 76). Roskoff argues "Legend is a child of the heart (*Gemüth*) and knows no reflection" (page 71); he suggests that the narrator and his hearers were not critical, and thus the legend finds no difficulty in the strange ignorance of Delilah who ought to have known that Samson was a Nazir and ought to have been familiar with the mysterious quality of his hair (page 71). Roskoff goes so far as to concede that the "sidereal relation permeates the entire Samson saga" (p. 110), but he claims that this pagan feature of it "has been overcome by the idea of Yahveh." Roskoff's concessions grant the whole case and so the believers in the historicity of Samson can hardly claim his authority for a denial of the mythical character of the story. The Yahveh idea is to him the saving element which renders the story religious and makes the historicity of some of its moments probable; and yet even this is of a doubtful value, for Roskoff admits that "the spirit of Yahveh comes over Samson and gives him strength to accomplish his deeds not otherwise than Homeric heroes are assisted by the gods" (page 45). Such is the view of a professor of theology who interlards his expositions now and then with pious contemplations!

Prof. H. Steinthal, of the University of Berlin, criticizes Roskoff severely for his theological bias. He blames him especially for calling Samson "the hero of prayer" (p. 70) who prayed to Yahveh and whom Yahveh helped; but Professor Steinthal is unfair in not allowing his predecessor the right to apply the story in his own way. Do not the Greeks of classical antiquity and modern admirers of Greek culture see in Heracles the ideal man, and so why should not Roskoff, a believer in Biblical traditions,

idealize the hero of the Jews in a way to suit his personal preferences? Though Steinthal is perhaps more at home in the field of comparative folklore, being one of the founders of this branch of learning, his own essay on Samson scarcely contains much more as to the facts and perhaps not fewer points for criticism than Roskoff's little book.

HOW MYTH AFFECTS HISTORY.

The Romance of Alexander is a mediæval epic which echoes the impression made by the great conqueror on the people of Asia. It incorporates many adventures of the Babylonian Izdubar epic and so the origin and history of this strange literary document is very instructive and shows how easily history and myth are fused into romance.[1]

The romance of Alexander tells us about his adventures in many strange countries, and of his struggles with wondrous monsters of all descriptions, reminding us of the incidents of the legends of Heracles, Odysseus, Æneas and other solar heroes, and the interest in these fantastical narrations continues down into the middle ages. We reproduce here some of the illustrations of a manuscript written and illumined in the thirteenth century, in which the history of Alexander of Macedon has been absolutely obliterated by mythological reminiscences incorporated into this romance.

Might not one literary critic rightly say that the Romance of Alexander is the Izdubar myth told of Alexander, and that it is originally a solar myth, while another would deny this proposition and claim that the hero of the romance is historical though the account is overlaid with mythical ornamentation? What would be the difference between these contradictory theories beyond mere words?

[1] Nöldeke, *Beiträge zur Geschichte des Alexander-Romans*, Vienna, 1890; and Meissner, *Alexander und Gilgamesch*, Leipsic, 1894.

THE LOCALIZATION OF MYTHS.

The Romance of Alexander is not an exception but a typical instance of the historization and localization of a myth. The Nibelung Saga is thoroughly localized on the banks of the Rhine and the Danube, and is connected with actual figures of history such as Attila. The Heracles myth definitely points out the places where Heracles was born and where he accomplished his mighty deeds. The royal families that traced their descent from him were still flourishing in historical times, and the "Pillars of Heracles" are standing to this day. The same is true of all myths and legends, of the Osiris myth in Egypt not less than the anecdotes told of Luther, Frederick the Great, Napoleon and other modern heroes. Even the fables related of the devil, are localized without any equivocation; the stones he threw, the bridges he built, the walls he piled up are still pointed out, and if the testimony of these actual traces of his activity as *corpora delicti* are accepted as evidence, we can not deny the historicity of the stories.

The historicity of Samson is accepted on no other ground. Dr. Gustav Baur, for instance, sums up his argument in Riehm's *Handwörterbuch des Biblischen Alertums,*—a standard work of German theology, as follows:

"Against the thorough mythization of this Biblical tale speak the definite localities to which Samson's birth, deeds and destinies are attached, and which in any attempt at a mythological solution will remain an insoluble residue, pointing decidedly to a definite historical tradition."

The *Encyclopaedia Biblica,* the most scholarly and critical theological work of reference in the English language, gives a similar verdict:

"Though the name means 'solar,' neither name nor story lends any solid support to Steinthal's idea that the hero is nothing but a solar myth. (Wellhausen, whilst

he rejects Steinthal's myth theory, also denies Samson's historical character.) He is a member of an undoubtedly historical family of those Danites who had their standing camp near Zorah, not far from the Philistine border, before they moved north and seized Laish. The family of Manoah has a hereditary sepulchre at Zorah, where Samson was said to lie, and their name continued to be associated with Zorah even after the exile, when it appears that the Manahethites of Zorah were reckoned as Calebites. The name had remained though the race changed (1. Chron. ii. 52-54.)."

We grant the argument, but we grant it as well for Homer's epics. The geographical background of the Odyssey is historical and among the adventurers of the Homeric age there may have been a man who bore the name Odysseus. At any rate, there were plenty of adventurers like him, yet we do not see how the concession refutes the truth that the Odyssey reflects the myth of the sun's migration. It is a myth changed into saga, or if you prefer, a saga based upon a mythical motive.

With the same argument we can easily prove the historicity of Münchhausen's adventures, for the family of Münchhausen still prospers in Germany, and the stories contain many allusions to definite historical and geographical conditions.

If we speak of history we ought to mean history pure and simple, unadulterated by mythical elements; and if we ask whether or not the Samson story is historical, taking the word seriously I do not see how any one—scholar or not scholar—can answer in the affirmative.

THE PHŒNICIAN MELKARTH.

We have reliable information that the Phœnicians celebrated Melkarth's death and resurrection on two distinct days of their festive calendar. The commemoration of the

god's self-sacrifice on the pyre was still celebrated in the days of Dio Chrysostom in an annual feast at which the god's effigy was burned on a gorgeous pyre; and Professor W. Robertson Smith quoting this statement from O. Müller adds that it "must have its origin in an older rite, in which the victim was not a mere effigy but a theanthropic sacrifice, i. e., an actual man or sacred animal, whose life according to an antique conception was an embodiment of the divine human life." The story of Sardanapalus and kindred legends are merely survivals of the Melkarth myth as has been pointed out by O. Müller in his article "Sandon und Sardanapal."[1]

The festival of the resurrection of Melkarth was celebrated annually in the month of Peritius which falls at the end of February and the beginning of March, at the time when the quail returns to Palestine, coming in immense crowds in a single night;[2] and according to Eudoxus[3] a quail sacrifice was made to commemorate the resurrection of the god.

Every myth of deep religious significance has the tendency to change into saga or legend, and will even influence history. Myths are frequently humanized by being ascribed to a national hero, or to some prominent historical person. But it also happens that some pious man is influenced by the ideas of his religion and actualizes in his life the lesson which his faith has installed into his heart. This is seen in the following incident recorded in Herodotus VII, 167. There the Greek historian tells of the Carthaginians fighting with the Greeks in Sicily in a battle which lasted the whole day from morning until night; and that Hamilcar, anxious to gain a decisive victory, offered holocausts on a great pyre, but when he saw that his people were routed, leapt into the fire himself and sacri-

[1] *Rhein. Mus.*, Ser. I, Vol. III. [2] Jos. *Ant.* VIII, 5. 3.
[3] Quoted by Athen, IX, 47.

ficed his life for the good of his people. Thus he was burned to death and disappeared, and Herodotus adds: "In this way Hamilcar may have disappeared as is stated by the Carthaginians, or it may have been different as say the Syracusans, but this much is sure that the Carthaginians offer him sacrifices, and have erected monuments in his honor in all their colonies, though the greatest of them is in the city of Carthage."

Some scholars think that Herodotus here confuses the Carthaginian hero with his god and transfers the myth from Baal Melkarth upon Hamilcar; but whether or not the incident is to be accepted as historical, it proves the power of myth and the influence of religious conceptions upon the actual life of the people.

THE TWELVE LABORS.

According to Dr. Gustav Roskoff (*loc. cit.*, pp. 22-30) the twelve labors of Samson are as follows:

1. He kills a lion with his hands. It is characteristic of Samson as well as of Izdubar, the Babylonian solar hero, and also of Heracles, that the lion is slain without the use of any weapon.

2. At his marriage at Timnath he proposes a riddle, and incidentally slays thirty Philistines at Ascalon.

3. He catches three hundred foxes and chases them with firebrands through the fields of the Philistines.

4. The Philistines burn his wife and his father-in-law's whole family which induces him to make great slaughter among them, whereupon he flees into the mountains of Judah and hides in the cleft of the Cliff Etam.

5. Samson is bound by the men of Judah and delivered to the Philistines who take him to Lehi, but "the ropes on his arms became like flax that has caught fire."

6. Samson picks up the jawbone of an ass and kills multitudes of his enemies.

7. Being overcome with thirst he prays for water and a spring breaks forth from the ass's jawbone.

8. When visiting a woman at Gaza, he escapes the ambush of the Philistines by rising at midnight and carrying with him the two doors of the city gate, which he plants upon the hill which is in front of Hebron.

9. Now he became entangled with Delilah. The treacherous woman bound him with seven new bowstrings, but when the Philistines came upon him "he snapped the bowstrings as a strand of tow snaps at the breath of fire."

10. Thereupon Delilah bound him with seven new ropes, but he "snapped the ropes off from his arms like thread."

11. Delilah weaves the seven braids of his hair into the web of her loom, but he pulled up the loom with the web and escaped the third time.

12. Finally Samson betrays the secret of his strength, and Delilah had the seven braids of his hair shaved; he was taken prisoner and blinded. But when his hair had grown again his strength returned and enabled him to break down the two pillars of the Dagon temple by which deed he buried himself with multitudes of his enemies under the ruins of the edifice.

We do not lay much stress upon this division of Samson's career into twelve adventures which would make their number agree with the twelve labors of Heracles and the twelve months of the year, but it is remarkable enough that this proposition is made by Roskoff who is so conservative as to be the main authority for the historicity of the Samson story.

THE LION AND THE BEE.

Some features of Samson's adventures are noteworthy. The lion symbolizes the heat of the sun and is but another symbol of the sun-god himself, but the mollification of the

solar heat is attributed to the sun-god, and so he is celebrated as the slayer of the lion.

The riddle concerning the honey in the carcass of the lion has proved a puzzle to all who still believe in literal inspiration. Bees will never make their habitation in dead animals and the form of the riddle indicates that the text has been greatly corrupted. The riddle is not a question but a statement—a positive proposition. It reads:

"Out of the eater comes something to eat;
And out of the sour[1] one comes something sweet."

MITHRAIC PLAQUE.[2]

And the answer is stated in the form of a question, thus:

"What is sweeter than honey, and
What is more sour[1] than a lion?"

It can only be regarded as a solution by doing violence to the meaning. The connection between the bee and the lion must have been known to the audience to whom the riddle was proposed, and so the very impossibility of the fact as a real event of life must have added to the interest of the solution.

There is an ancient Mithraic plaque representing a

[1] "Sour" or "strong."

[2] The obverse of the medal shows Mithra between Castor and Pollux; above his head the raven and other Mithraic symbols. Underneath, the altar with the sacramental bread, the cup of the eucharist, the fish, the dove, etc. The reverse shows in the center a lion with a bee in his mouth. He is surrounded by seven stars with illegible inscriptions.

lion with a bee in his mouth and the simple explanation of it may be nothing more nor less than that the bees produce honey in the lion, i. e., the month when the sun stands in the sign of Leo. Thus it would be quite plausible for an ancient riddle to propound the paradox, "When or where can honey be found in a lion?" And the answer, alluding to the deed of the sun-god, would be: "In the month of the slain lion." Accordingly the strange thing comes to pass that

> "Out of the eater comes something to eat;
> And out of the sour one comes something sweet."

That the original meaning of the riddle has been obliterated in the Samson story is but natural when we consider the redactor's tendency to cut out mythological references.

THE FOXES WITH FIREBRANDS.

The story of the three hundred foxes appears in its true light when we consider it as a parallel to the Roman custom of chasing foxes with firebrands through the circus on the festival of Ceres, an ancient patrician ceremony which, however, was so popular that it had been customary for the plebeians to take part in it as guests. On the main day (according to Preller, April 19) small gifts were thrown among the crowds, usually eatables, among which nuts are specially mentioned. There were no horse races, but red foxes with firebrands tied to their tails were chased through the arena. It is understood that they signified the cereal disease of robigo, for the word means "red fox," as well as the red blight of wheat.

Ovid (*Festi* IV, 679 f.) tells the story of a peasant of Carseoli which is intended to explain the origin of the custom. A rustic couple had a son of about twelve years who caught a fox that had frequently stolen hens. The boy wrapped him in straw and hay and set fire to it. The

fox managed to escape and retreated into the wheat fields, igniting the whole harvest. Thereupon a law was passed that every captured fox should be killed and the foxes were punished in the Cerealia as above mentioned.[3]

We cannot doubt that this coincidence between Samson's foxes with fire-brands and their Roman counterparts is not accidental, but both are distant echoes of a most primitive notion which in other parts of the world has been lost.

SEMELE AND DIDO.

It is not uncommon in ancient mythology for brides of solar heroes to be burned in fire, as Semele dies through the awful presence of Zeus. Accordingly, if Samson's wife is burned together with her father's family, it is quite in keeping with the general character of our myth however improbable it might be in a historical story.

We have repeatedly mentioned Æneas as one of the solar heroes, and will say that evidence of his character is found not only in the fact that he is the son of Venus, nor in his migration over the whole world, nor alone in his descent into Orcus, the realm of the dead, but also in that particular incident of having a bride who dies in the fire as a holocaust. When Æneas comes to Carthage he falls in love with Dido, but at a divine command he leaves her, which causes her in her despair to commit suicide, and burn herself on the pyre as a victim of her love.

Virgil's version of the death of Dido is a comparatively late modification of an older legend, alluded to by the historian Timæus and by Justinus,[1] according to which Dido

[3] For detailed references and further information of kindred practices especially the worship of Robigo in the grove of Robigo, also the Bœotian story of the dog Kephalos and the Teumessian fox, and the Roman custom of sacrificing young dogs of red color at the time of the dog-star on the road to Nomentum, see L. Preller's *Römische Mythologie,* 3rd edition by H. Jordan, Berlin, 1883, Vol. II, pp. 43 ff.

[1] *Fragm. Hist. Gr.*, ed. Mueller, I, 197; and Justinus XVIII, 6. Compare W. R. Smith's *Religion of the Semites,* (London, 1901), p. 374.

sacrifices herself for her husband Sicharbas. Prof. G. Hoffmann (in his *Phoenicische Inschriften*, p. 32 f.) points out that she is the goddess Tanith, the consort of Baal, and the word Sicharbas is the Phœnician *Sichar baal*. The word *Sichar* corresponds to the Hebrew *dzecher*[2] which means "commemoration."

There is a whole class of legends on solar brides of which the story of Semiramis it typical. Like all these fantastic traditions, it is a myth that has been localized and by being transferred to an historical person changed into saga. The original form of the myth is still preserved in the tales of the death of Astarte at Aphaca and the suicide of Aphrodite, who after the death of Adonis threw herself down from the Leucadian promontory.[3]

SAMSON IN HIDING.

Steinthal calls attention to the fact that Apollo after having slain the dragon seeks refuge in flight, and Indra does the same after he has slain the monster Vritra. He also maintains that El, the highest Semitic God, must hide, and in the Samson legend we read that the hero in spite of his great victory over the Philistines flies and hides in the cleft at Etam (Chap. xv. 8). Steinthal regards this *motif* as a common trait of solar legends and explains it as due to the observation that after a storm which appears to be like a struggle between two powers of nature, a calm sets in, and this calm is interpreted to mean that the hero after his victory, retires and hides in some cleft or cave.

Steinthal's explanation does not appeal to us. Like some other theories of his it is far-fetched, and even if he were right, we think that in the Samson legend his

[2] זֵכֶר

[3] Ptol. *Nov. Hist.*, VII, p. 198. Cf. W. R. Smith's *Religion of the Semites*, p. 375.

hiding is not, as Steinthal claims, without sufficient motive. The Philistines were the masters of the country, and it was but the duty of the authorities to search for the bold murderer who, without sufficient provocation, had slain thirty men at Ascalon and still continued by indiscriminate slaughter to make the highways unsafe. The fact, however, remains that Samson hides—an event which is not uncommon in the career of solar heroes.

We must assume that when the Samson story reached its final form, the solar character of the hero had already been lost sight of, and so we can not expect that the details of Samson's adventures should be parallel to definite phenomena in the sun's course. But if we seek for an explanation of Samson's hiding, we would suggest that the sun hides behind the clouds, and the event takes place after an unusual heat, which means that the sun-god has emptied his quiver of arrows against his enemies. We note further that the hidden sun-god is supposed to be vanquished by his pursuers, but he bursts out on them with unexpected ferocity in a thunderstorm, and it is peculiar that in this special instance the sun-god is identified with the god of thunderstorms, a peculiarity which is most assuredly verified in the Samson legend, for when Samson is taken prisoner by the Philistines, he picks up the jaw-bone of an ass and slays a thousand of his foes.

THE JAW-BONE OF AN ASS.

The story of the jaw-bone of the ass has been localized, and it appears that a certain rock formation has been called *Ramath-Lehi,* i. e., "The Hill of the Jaw-Bone." The Hebrew narrator changes it to *Ramah Lehi* which means "he threw away the jaw-bone," saying that here Samson dropped his weapon.

It is noteworthy that the name "ass's jaw-bone" in

Greek (i. e., *Onugnathos*[1]) is given to a promontory at the southern end of Laconia as Strabo informs us, (VIII, 5, 1, p. 353), and we may assume that here, too, the name refers to the deed of some ancient hero now forgotten.

Jaw-bones, and especially the jaw-bones of asses (for

PERSEUS WITH MEDUSA'S HEAD. 4957

horses were not yet domesticated) were used in the paleolithic ages as weapons, and their form seems to have been retained for a while in the age of bronze, before the invention of the sword; for it is not improbable that the so-called "sickle-sword" of the ancient dragon-killers Bel

[1] ονούγναθος.

Merodach and Perseus is but the primitive jaw-bone weapon made of bronze.

In the ancient bas-reliefs representing Bel Merodach's fight with Tiamat, the god is armed with thunderbolts,[2]

SILVANUS WITH SICKLE. 5019

but in Table IV of the Creation story (lines 35 ff.), we learn that he carried a sickle-sword or falchion (from the Latin *falx*, a sickle). The lines describing his armament read as follows:

[1] See the author's *History of the Devil*, p. 41.

"He made ready a bow,
Prepared it for a weapon,
He armed himself with a falchion,
Attaching it [to his belt];
He took the god-weapon,[8]
His right hand seizing it.
Bow and quiver,
He hung at his side.
He caused a lightning-flash
To precede him,
Whose interior he filled
With shooting flames."

KRONOS WITH A SICKLE-SWORD. 4958

When speaking of sickle-swords we must consider that the ancient sickle was shaped exactly like a jaw-bone as may be seen for instance in the ancient representations of Silvanus whose common symbols are a sickle and a cypress branch. Later on both sickles and sickle-swords are replaced by instruments bearing the shape of a modern sickle.

[8] Presumably lightning.

Kronos, the most ancient among the gods, is also represented with a sickle-sword in his hand, and in the more archaic statues this sickle-sword, too, bears a strong resemblance to the ass's jaw-bone. If these data can be relied upon, we may fairly well assume that among some of the primitive folks, the sun-god's weapon was an ass's jaw-bone which accordingly would have to be identified with the thunderbolt.

SAMSON SLAYING THE PHILISTINES. 4699
By Schnorr von Karolsfeld.

Our explanation is further verified by one significant detail of the story which associates the jaw-bone closely with gushing waters. If the jaw-bone is the thunderbolt, we must expect that after its use there will be rain, and Guido Reni with his fine artistic sentiment still feels this interpretation when in his picture of Samson quenching

his thirst from the drink that came from the jaw-bon represents the water as rushing down from above, the l holding the jaw-bone high above his head.

The Biblical story tells us of a fervid prayer of San which, being poetical in its wording, may be a quota from an older version. But we may well assume that cording to the ancient interpretation it must be rega not in our modern sense of an orison but as a magic s

When the legend was localized, a spring in the ho place of the Rock of the Jaw-bone was pointed out as water which had come forth in answer to the praye the exhausted hero.

Diodorus Siculus (IV, 22) tells us that when Her wandered from Pelorias to Eryx, the nymphs on the made the warm springs Himerea and Egestæa gush f for his refreshment.

Before we proceed we will mention that Sams shout of triumph concerning his successful slaughter tains a pun which renders the original almost untr latable. The word *khamor* means both "ass" and "he and he exclaims at the height of his triumph:

בְּלֶחִי הַחֲמוֹר
חֲמוֹר חֲמָרָתָיִם
בִּלְחִי הַחֲמוֹר
הִכֵּיתִי אֶלֶף אִישׁ

"With the jaw-bone of the *khamor* (ass)
A *khamor* (heap), two *khamors* (heaps)
With the jaw-bone of the *khamor* (ass)
I slew a thousand men."

It is interesting to see how translators have trie reproduce the pun. A German scholar, E. Meier, tr lates as follows:

"Mit dem *Back*en des *Pack*esels
Ein *Pack*, zwei *Pack*,

Mit dem *Back*en des *Pack*esels
Erschlug ich tausend Mann."

Professor G. F. Moore in the translation in the *Polychrome Bible*, translates the same passage very ingeniously as follows:

"With the jaw-bone of an *ass*
I *ass*ailed my *ass*ailants,[5]
With the jaw-bone of an *ass*
Have I slain a thousand men."

The well is called *en haqqore*,[6] the "spring of the crier," which latter means "partridge" and is also an epithet of

449 SETH.

SETH AND ANUBIS. 450

the ass. His formidable braying is considered prophetic in folklore traditions, and this belief is extended to the neighing of the horse, an animal which supplants the ass though it does not appear in the history of the Orient until later. We remember that according to Herodotus, Darius was created king on account of the neighing of his horse. In Bible folklore, Balaam's she-ass was endowed with the gift of prophecy and there are scattered traditions still extant which prove that Yahveh as well as the war god Seth of the Semitic invaders in lower Egypt was ass-headed.

[5] The first and second lines would be more literal as follows:
"With the jaw-bone of an *ass*
I'm *mass*ing them in *mass*es."

[6] חַקֹּרֵא The word is also transliterated *hakkore;* but the k-sound is sharp and is commonly transcribed *q*.

THE GATES OF GAZA.

It is an ancient Babylonian notion that the sun-god enters the inhabited world in the morning through two pillars which accordingly are erected in every Semitic temple. Even in the temple at Jerusalem the two brazen pillars were never missing, although their meaning had in later times been entirely lost sight of. To Phœnician

THE GATES OF HEAVEN OPENED TO SHAMASH. 2025

THE BABYLONIAN PROTOTYPE OF THE PILLARS OF HERACLES. 2037

sailors it was quite natural that the two rocks at the strait of Gibraltar should be considered as the two pillars of Melkarth through which the sun was supposed to pass on his descent into the underworld. It is again Diodorus who tells us (IV, 3) that Heracles put up the two mountains at the end of the Mediterranean which have, accord-

ingly, been called after him the "Pillars of Hercules," down to Tarik's time,[1] and should the question arise, How is it possible that the two pillars in the east are found also in the west, or that the pillars in the west should also be found in the east, the answer suggests itself that in the night the sun-god had carried them from one place to the other. In this way Samson's peculiarly unpractical joke finds a natural explanation, if regarded as a mythical event.

THE WEB OF DELILAH.

The accounts that Samson was bound and that he freed himself as if by the heat of fire are easily explained as incidents of a solar myth. Nature is ice-bound in winter, but with the awakening of spring the fetters melt away. The binding is repeated, for during the fall months the inroads of winter become more and more serious. The hero frees himself three times before he is permanently fettered.

When Delilah tried to bind her lover, Samson said to her: "If thou shouldst weave the seven braids of my hair into the web and beat it up with the pin my strength would leave me." And she applied this method, but Samson "pulled up the loom with the web"—and we may add that Delilah's web was torn and flew all over the fields. If we remember that Delilah (like Samson) is a mythical figure and that the threads of her loom are to be woven into the rays of the sun, we shall at once find the proper explanation of the web which can be nothing else than the gossamer of autumn. Gossamer is also called Mary's yarn, and though the original meaning of the word is lost, we still know, that it has something to do with the web of some pagan goddess, or fairy. When the gossamer flies over the field we know that winter is near. It is the last snare

[1] The present name *Gebr al Tarik*, or Gibraltar, means "Rock of Tarik."

that the sun-god has broken and torn to tatters. The enchantress will now shear his locks and then his strength will be gone.

SAMSON'S SEVEN BRAIDS.

Nothing can be more suggestive of Samson's solar character than the loss of his strength. The hair of the sun-god is commonly interpreted to be the rays of light that surround the sun, and Apollo is called by Homer (II, XX, 39) "he of unshorn hair," which translated into Hebrew would mean the Nazir. Samson's hair is put up

SUN-GOD WITH SEVEN-RAYED HALO. 2504
Mithraic Monument and Etruscan Wall-painting.

in seven braids in the style of the sun-god who in one of the Mithraic monuments (reproduced by Cumont, *Textes et Monuments,* p. 202) is represented with seven rays, characterizing the mysterious power of the seven planetary gods. The loss of Samson's strength is due to the fact that he is deprived of his hair. The name of the traitress Delilah is symbolical and means "the weakening or debilitating one." Finally Samson is blinded, (the sun loses his light), and when he dies he stands between the

two pillars of sunset, at Gaza, the most western city in Danite geography.

THE ONE-EYED ONE.

We know that the German god Wodan had one eye only, because there is only one sun in the heavens, and we are told in Teutonic mythology that Wodan had pawned his other eye to Mimer, the god of water. The second eye of Wodan is the reflection of the sun in the ocean. In consideration of the fact that the sun is the one-eyed god, it is noteworthy that the dying Samson exclaims: "I will avenge myself on the Philistines for one of my two eyes." The authorized version ignores this feature and translates "for my two eyes," and the current interpretation of Hebrew scholars (as stated by Professor Moore in the Polychrome Bible) is the idea that "the destruction of all these Philistines could be but a partial retaliation" which, if this interpretation were admissible, would only add to the unsatisfactory character of the conclusion of the Samson story. We believe that the original story knew a reason why Samson was one-eyed and the last prayer of Samson, which is a piece of poetry, must be regarded as a quotation from an ancient epic representing a more primitive tradition. Samson's prayer reads as follows:

"Adonai Yahveh	אֲדֹנָי יהוה
Remember me	זָכְרֵנִי נָא
And strengthen me.	וְחַזְּקֵנִי נָא
Yea! once more now;	אַךְ הַפַּעַם הַזֶּה
Elohim!	הָאֱלֹהִים
And I wreak vengeance	וְאִנָּקְמָה נְקַם־
For one of my two eyes	אַחַת מִשְׁתֵּי עֵינַי
On the Philistines."	מִפְּלִשְׁתִּים׃

The poetical fervor of this passage, especially the rhyme, *Zakreni na ve hazqeni na*, so rare in Hebrew lit-

erature, has been most happily imitated by E. Meyer, whose version runs thus:

"O merke mich doch,
Und stärke mich doch
Nur diesmal noch,
O du mein Gott!
Damit ich nehme
Auf einmal Rache
Für meine zwei Augen
An den Philistern!"

It is, however, barely permissible for Meyer to translate the word אַחַת which means "one," by *auf einmal* in the sense of "all at once" whereby he avoids the difficulty of a literal rendering, implying that Samson takes revenge "for one of his two eyes."

THE LION AND THE DRAGON.

Among the twelve labors of Heracles we have one, consisting in the killing of a lion, which is common to all solar heroes of the Semites; and it is certainly not accidental that the Tyrian Melkarth and the Babylonian Izdubar are represented as tearing a lion in two and killing him without a weapon, merely with their hands, just as Samson does in the Biblical story. In Greece the lion's skin is the typical dress of Heracles.

Northern solar heroes fight a monster or a dragon, the symbol of swamps and fogs. This is instanced in the Beowulf legend, in the Siegfried Story, and in the fight of Thor with the serpent Jörmungander. But in the Samson story the fight with a dragon is missing, which may be regarded as an evidence of its ancient date. It is an indication that the Biblical tale is purely Semitic and uninfluenced by Aryan thought.

The Greek Heracles may originally have been an Aryan solar hero, a Siegfried, whose character was modified by the importation of Semitic features; or he may have

LION-KILLING HERO OF KHORSABAD.

HERACLES ENTERING THE DRAGON.

IZDUBAR STRANGLING A LION.

MELKARTH OF THE PHOENICIANS.

been the Semitic solar hero who became thoroughly Hellenized in Greece. Every one of these solar heroes has become a typical exponent of the nation to which he belongs, and so Samson remains a genuine Hebrew figure, yet he typifies the archaic and prehistoric age, not the more civilized period of later Judaism with its purer faith and higher morality.

We can in this connection only indicate that the similarity of Heracles to Izdubar is commonly conceded not only in general, but also in some important details.

Izdubar is frequently identified with Nimrod, and we can not doubt that the Biblical Nimrod contains some features of the Izdubar story. Either one is a "great hunter before the Lord," and the beginning of Izdubar's kingdom, as that of Nimrod, is "Babel and Erech and Akkad, and Calneh, in the land of Shinar."[1] It is possible that Nimrod is an appellative of Izdubar. The name has been explained as "Bright Light."[2]

The name Izdubar recalls the nature of Mithras, who in the later development of Mazdaism plays approximately the part of Christ in Christianity. Mithras means "Splendor," and many mythological features of Mithraistic traditions indicate that he also is a personification of the sun and a deification of all the blessings which have found in the sun an appropriate symbolization.

The Izdubar epic as well as the Heracles myth treat the question of immortality, and though it seems that Izdubar (at least so far as the twelve tablets go) does not succeed in attaining his aim, we still see that the problem of immortality is the pivot of the whole poem. The Heracles myth is somewhat further developed for the hero surmounts all difficulties, and, though he must die, he attains

[1] Gen. x. 10.
[2] Roscher's *Lex. d. gr. u. r. Myth.*, II, p. 773.

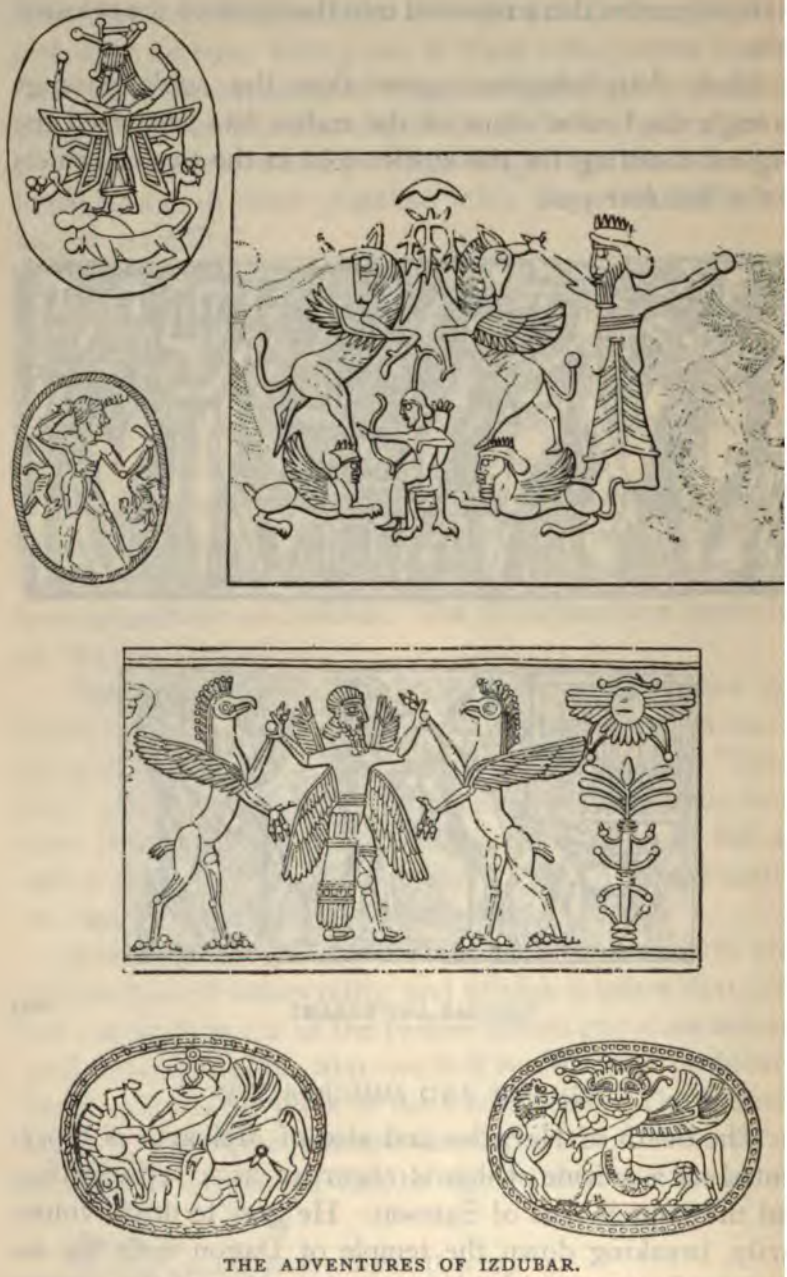
Olympus and is there received into the circle of the celestial gods.

Most Assyriologists agree that the sun's passage through the twelve signs of the zodiac has furnished the original meaning for the stories told in the twelve tablets of the Izdubar epic.

IZDUBAR AND EABANI. 4247

IZDUBAR AND IMMORTALITY.

The death of Heracles and also of Melkarth is represented as a suicide which is regarded as a self-sacrifice, and the same is true of Samson. He goes to death voluntarily, breaking down the temple of Dagon with the intention of slaying with him a great number of the oppres-



THE ADVENTURES OF IZDUBAR.
From ancient monuments.

sors of his people. He knew that the edifice was filled with the lords of the Philistines, and it is expressly stated that on the roof alone there were three thousand men and women. The tacit implication is that the Philistines were weakened to such an extent that although the Israelites had not been freed, the Gentile authorities could no longer suppress them as mightily as before, and so it was fulfilled that Samson should "begin to deliver Israel out of the hand of the Philistines."

The end of Samson is the main point in which a comparison of the Hebrew hero with Heracles and Izdubar breaks down, for it is characteristic of pagan solar myths

IZDUBAR AND ARAD-EA. 4213

that the sun-god goes down to Sheol, or whatever may be the name of the world of the dead, and returns thence to the world of the living. Not only Heracles descends to Hades, but also other heroes of the same type, Odysseus, Orpheus, Æneas, etc., and the same is stated of Izdubar. The acquisition of immortality is the aim of both the Greek and the Babylonian heroes. In his anxiety to find his dead friend Eabani, Izdubar goes in search for the land of no return, and arrives at the coast, but the Queen of the Sea informs him that none but Shamash, the god of the sun, has ever crossed the ocean. However, Izdubar is persistent and is finally permitted to venture on the sea in company

with the ferry-man, Arad-Ea, the Babylonian Charon.[1] They reach the Isles of the Blest and while remaining in the ferry Izdubar speaks with his friend, who gives him information concerning the fate of the dead. Eabani thinks that the hero could not endure the description, but he comforts him with the thought that those who receive proper funeral rites will be well taken care of. Suffering from leprosy Izdubar seeks the water of life and the plant of life. He is healed from leprosy through the assistance of Sitnapishtim, and he finds the plant which he calls "as an old man he is changed into a youth," but by some mishap he loses it again.

When Heracles started out in search for the immortality-giving apples of the Hesperides, he encountered also the difficulty of crossing the ocean, and he succeeded only because the sun-god allowed him to use his bark.

Izdubar after death becomes a god, and Heracles too is welcomed in Olympus, but Samson's career ends with his life.

SAMSON AND HERACLES.

It is characteristic that while Heracles, the hero of a cosmopolitan nation, is regarded as the saviour of mankind who travels all over the inhabited earth, Samson is the saviour only of the tribe of Dan, and all his deeds are accomplished within the small radius of the tribe's political horizon. He is born in Zorah and he dies in Gaza.

It is customary even among critical minds to speak with admiration of the literary beauty and grandeur of the Samson story. Steinthal among others has devoted a number of pages to its praise, and I will not deny that especially the oldest and most original passages are ani-

[1] The Greeks owe their ideas concerning the other world mainly to the Egyptians, and so the names "Charon" and "Elysium" are Egyptian. The former simply means "ferry-man" and the latter is the Egyptian *Aalu*, the Fields of the Blest,—also spelled *Aaru*.

mated by a truly poetic spirit, but judging the work in its present form I can only regret the censorship of its Deuteronomic editor, for I believe that the passages which he has cut out as mythological, have been the most valuable, the most interesting, and also the most religious part of the legend. They are now lost beyond hope of recovery, and so the hero of a primitive faith that was animated by a belief in immortality, has become a mere country lout and a tough, who conscious of his physical strength is always ready for a brawl, and we feel the delight of the narrator as well as his audience when Samson finds a pretext to kill indiscriminately some thirty or a thousand Philistines. Even considered from the standpoint of Israelitic patriotism he has done nothing to lift his nation to a higher plane or a nobler conception of life.

How much higher ranges the Greek Heracles, who in spite of the primitive crudeness of the original myth, has been idealized by Greek poets and philosophers into a pattern of highminded virtue!

As early as the seventh century before Christ the poet Peisander wrote an apotheosis of Heracles, called the *Heracley,* and later Greek authors, such men as Xenophon and Prodicus,[1] regarded him as an incarnation of divine perfection. It was said of Heracles that he came to the parting of the ways of life and he chose the difficult and steep, the way of virtue in preference to the broad and easy road to vice. And since Heracles had become the ideal of Greek youth, it became customary to look upon the details of the old myth as mere perversions of a deeper religious truth, supposed to be the original. Epictetus who calls Heracles a saviour, and the son of Zeus, says: "Do you believe the fables of Homer?"

Seneca speaks of Heracles as the ideal of the good man who lives exclusively for the welfare of mankind.

[1] Xen., *Mem.* II, 1; Plato, *Symp.*, p. 177 B.

Contrasting him to Alexander the Great, the conqueror of Asia, he says (*De Benef.*, I, 14):

"Heracles never gained victories for himself. He wandered through the circles of the earth, not as a conqueror, but as a protector. What, indeed, should the enemy of the wicked, the defensor of the good, the peace-bringer, conquer for himself either on land or sea!"

Epictetus praises Heracles frequently and declares that the evils which he combated served to elicit his virtues, and were intended to try him (I, 6). Zeus, who is identi-

THE ASCENT OF HERACLES TO OLYMPUS. 186
Ancient vase picture.

fied with God, is called his father and Heracles is said to be his son (III, 26). Heracles, when obliged to leave his children, knew them to be in the care of God. Epictetus says (III, 24):

"He knew that no man is an orphan, but that there is a father always and constantly for all of them. He had not only heard the words that Zeus was the father of men, for he regarded him as *his* father and called him such; and looking up to him he did what Zeus did. Therefore he could live happily everywhere."

The Samson story breaks off very abruptly and leaves a very unsatisfactory ending in its present form, the only comfort being that in his death the hero kills an incredible number of Philistines. If this had been all, the Biblical tale would simply be the record of a dearly bought victory of the Philistines.

However, we must take into consideration,—and the significance of this point should not be underrated,—that Christians look upon Samson as one of the prototypes of

DESCENT OF DIONYSUS TO HADES. 1924

Christ. Yet, strange to say, the point which alone could have made Samson a prototype of Christ is missing in the Samson story.

Prototype means a first or imperfect and only tentative type. All solar heroes are prototypes of Christ, and when the fulfilment of the times focused all pre-Christian religions into one, everything worthy and good in the prototypes of Christ was transferred upon Jesus whom the Church accepted as the fulfilment. In this perspective the

Samson story seems to regain its original pagan significance as symbolizing man's hope for immortality.

The saviours and heroes of Greek and Roman mythology (Heracles, Dionysus, Orpheus, Æneas etc.), had gone down into the domain of Hades and returned to the land of the living; so it was a predetermined doctrine that Jesus before he could be recognized as the Christ, had to descend to hell and rise again from the tomb.

The original narrative of the Samson story must have ended in the glorious return of the hero to life, but the Biblical account knows nothing of it.

THE DYING GOD.

There are a number of incidental features in the Samson legend that are occasionally met with in kindred tales of saviours, dying gods, sacrificial divinities and solar heroes. They have not been mentioned before, because they are difficult to classify and so we group them here together as a collection of stray observations having one common point of issue, the fate of the saviour-god who lives and dies for mankind.

The people of a primitive age formed their idea of a saviour-god according to their religious convictions, traditions, expectations and especially their superstitions, all of which had become incorporated in the performance of their annual festivals. When the time came that they expected a Messiah or a Saviour, they naturally measured those figures of stories or perhaps also of natural life, with the notions they thus attributed to the ideal formed of him; and as soon as some hero, historical or legendary, became a candidate for the honor of being recognized as a god-man his admirers naturally ascribed to him all those features which were deemed the indispensable characteristics of the god.

We do not say that the life of Jesus, especially his pas-

sion and crucifixion were unhistorical; on the contrary we believe firmly that the nucleus of the Gospel stories is based upon fact, but we insist that the Gospel writers had in mind a typical, albeit vague, idea of the traditional conception of the god-man, and they interpreted the facts with a tendency which consciously or unconsciously dominated their minds, that they had to prove that Jesus was the Christ and that both his personality and his destiny fulfilled all the conditions of the current expectations. Thereby they incorporated inadvertently and sometimes purposely all

SAMSON'S DRUDGERY.

those features which in their time were deemed indispensable characteristics of the Saviour.

We notice that Heracles is made a servant and he is bound by his destiny to accomplish the twelve labors for the weal of mankind. The underlying idea is that the sun drudges as a slave in the ministry of our needs; and so Samson too is degraded into a slave and set to turning a mill. It is expressly stated also of Christ (Phil. ii. 7) that he "took upon him the form of a servant."

The explanation of the unhappy fate of the dying god receives different versions in different stories, but it is

natural that he is always represented as the innocent victim of treachery. Judas is made responsible for the crucifixion of Jesus, and Samson succumbs to the wiles of the treacherous Delilah. The legendary character of the story appears also in the fact that any ordinary mortal would have been on his guard against the falsehoods of his paramour, but in myths and legends the destiny of a man is determined by other conditions, and so he is represented as incredibly stupid and absolutely blind to the snares laid for him. On the other hand, Delilah as well as the Philistines ought to have had other methods to find out Samson's secret.

Berosus tells us of Babylonian customs that "during the five days of the festival called the *Sacaea*, a prisoner condemned to death was dressed in the king's robes, seated on the king's throne, allowed to eat, drink, and order whatever he chose, and even permitted to sleep with the king's concubines. But at the end of five days he was stripped of his royal insignia, scourged and hanged or crucified."[3] This feast was celebrated to represent dramatically the fate of the dying god in the same spirit and a similar fashion as was the custom among the Aztecs of Central America and the Khonds of Bengal.

This Babylonian rite is apparently, as Mr. Frazer suggests,[4] a further evolution of a more ancient custom that is still practiced among the savage tribes of Africa, according to which the king, who is believed to be an incarnation of the deity, usually the god of life, or of the sun, or heaven, is sacrificed in his best years and before his physical power can give out. Mr. Frazer says:

"We must not forget that the king is slain in his character of a god, his death, and resurrection, as the only means of perpetuating the divine life unimpaired, being

[3] See J. G. Frazer, *The Golden Bough*, Vol. II, pp. 24 ff.

[4] *Ibid.*, II, 240 ff.

deemed necessary for the salvation of his people and the world."

With the advance of civilization the old custom was modified. Mr. Frazer says:

"When the time drew near for the king to be put to death, he abdicated for a few days, during which a temporary king reigned and suffered in his stead. At first the temporary king may have been an innocent person, possibly a member of the king's own family; but with the growth of civilization, the sacrifice of an innocent person would be revolting to the public sentiment, and accordingly a condemned criminal would be invested with the brief and fatal sovereignty."

Finally even the vicarious sacrifice of a substitute king was abolished, and either replaced by an animal victim or merely acted on the stage in a dramatic performance.

Though the victim is a god, or rather the representation or incarnation of the deity, he is to be abandoned to the most dreadful fate of death, and so we meet with a statement that in the last moment he is forsaken by his god. As Christ cries out *"Eli, Eli, lama sabachthani,"* so we learn that Yahveh forsook Samson and his strength was gone.

A special endeavor is made to have the sacrifice voluntary, and this is done among the Aztecs by intoxicating the victim with drinks and with honors and slaying him before he has a chance to give an ill-omened sign of regret. At the same time the people must have come into possession of the person of the victim in a legal way. Accordingly it is insisted on that he has to be purchased with money and the price must be paid before the sacrifice is performed. This feature is evident in the ritual of the Khonds and is not absent either in the Christ story where Judas receives the thirty pieces of silver, nor in the Samson story in which a sum of money is paid to Delilah.

The idea that no atonement of sin is possible without the shedding of blood is common to all pre-Christian religions (with the sole exception of Buddhism), and even Christianity still clings to it, as we read in Hebrews ix. 22, "without shedding of blood is no remission."

The old Mexicans slew their god and ate him, which is a symbolical act indicating that we live on the deity, be it the god of vegetation or any other life-spending source of nature. Originally the harvest god is thought present in the very cerials, and in partaking of food we partake of the god himself. From this standpoint it was deemed essential that the devotees should eat the flesh and drink the blood[5] of the god and we cannot doubt that in the age of savagery, this ritual was literally performed, horrible though it must appear to modern mankind that condemns cannibalism as the most detestable abomination. In place of the human representative of the god we find in the ceremonies of a less savage age a substitute of some kind, either a sacrificial animal or a sacrificial bread offering, which latter was freqently kneaded in the shape of the god incarnation. A ceremony in which the figure of a god made of dough is killed and then sacramentally eaten is still performed in Tibet, and we can not doubt that the original conception of the Lord's Supper is an echo of this ancient rite of eating the god, which was deemed an essential part of the feast held in his honor.

The same idea is very emphatically expressed in John vi. 53-57: "Then Jesus said unto them, Verily, verily, I say unto you, Except ye eat the flesh of the Son of man, and drink his blood, ye have no life in you. Whoso eateth my flesh, and drinketh my blood, hath eternal life; and I will raise him up at the last day. For my flesh is meat indeed, and my blood is drink indeed. He that eateth my

[5] Even the Old Testament speaks of "the blood of the grapes." See Gen. xliv, 11.

flesh and drinketh my blood, dwelleth in me, and I in him. As the living Father hath sent me, and I live by the Father: so he that eateth me, even he shall live by me."

The great progress of Christianity consisted in the practical abolition of all blood-sacrifices as well as the actual partaking of the flesh and blood of the victim. The idea of the significance of blood and the shedding of blood was too firmly rooted in the minds of the large masses of mankind simply to be set aside as was done in India by the Buddha. Acknowledging the force of the ancient religions, Christianity overcame them by pointing out that the atonement was now accomplished for all time through the death of Christ, and the sacrament of partaking of the very flesh and blood of the god was sufficiently performed by the substitution of sanctified bread and wine. This satisfied all the pagan claims without continuing the barbarous ceremony.

If the original Samson story contained anything of this kind it would have been so offensive to the redactor that he would not have tolerated it, and so its absence is naturally explained.

How tenacious traditions are! The old ritual of a human sacrifice has been abandoned but the festival is still continued to the present day in the form of the carnival which not without a good historical reason precedes in the annals of the Christian calendar the celebration of the passion of Christ. The king of the carnival was originally the victim that was to undergo the torture of a sacrificial death, but shortly before his doom he enjoyed the honors of a mock-kingdom. We read of Christ that they "put on him a scarlet robe. And when they had platted a crown of thorns, they put it upon his head, and a reed in his right hand; and they bowed the knee before him, and mocked him, saying, Hail, King of the Jews!"

It can scarcely be accidental that the Philistines are

said to have had Samson produced at their festival, "that he might make them sport."

We cannot doubt that the king of the Sacæan festival was conducted through the city in festive procession, and we are inclined to think that this feature of the ceremony formed one of the most popular and impressive parts of the feast. Even this has been preserved in both the story of Christ and latter-day customs, such as carnival processions. The Gospel stories dwell with special emphasis on the triumphal entry of Jesus into Jerusalem, and some of our Christian artists have indeed represented the scene as a theatrical pageant which is specially notable in Doré's well-known painting.

Our carnivals have originated from dramatic representations and are a secular treatment of the same religious ceremony, which in the Church developed as the so-called mystery-play, originally a dramatic performance of the Easter story.

In the age of Constantine Christianity became the state religion of the Roman empire. This event, to be sure, Christianized the broad masses of the people but it introduced at the same time a number of pagan features and pagan beliefs into the life of the Church. It must have been in this age that the Church continued the practice of making the Easter ritual a dramatic performance after the precedence of the Attis and Tammuz festivals, the former of which, as we learn from Firmicus, was celebrated on the first day of spring while his resuscitation to life was placed two days later.

How much the Christian ceremonies preserve of the ancient pagan traditions appears also from the significance that light plays in the Easter ritual. In the Greek Church the priest announces the beginning of the feast with the words: "The celestial fire has come down from the clouds; the holy candle is lit."

There is an additional point worth mentioning. The word *sakhaq*,[6] which in English versions is commonly translated "to make sport," includes the meaning of singing, dancing, and playing on musical instruments, in the same way that the word "play" is also used in both senses.[7] Accordingly Luther translates the term by *spielen*, and the traditional interpretation as represented in some Biblical pictures makes Samson play on a stringed instrument which proves that our popular conception of him is unconsciously associated with Apollo, the solar god, who is at the same time a master of the lute.

These notes on comparative saviour-lore throw a light also on the construction of the Gospel story of Christ in which we find so many echoes of ancient pagan saviours. Samson, the solar hero and as such a prototype of Christ, was betrayed and sold for money; he drudged as a slave, and shortly before his death made sport before the Philistines. These incidents are minor points, but their introduction into the Samson legend can scarcely be regarded as accidental, when we bear in mind the significance which these same features possess in kindred stories where their connection with the underlying idea of the fate of the dying saviour-god has not yet been lost.

SAMSON'S TOMB.

Every province of Egypt had a sepulchre of Osiris, and the legend explained this by telling how his body had been cut into several pieces which were buried in these different places. Perhaps originally the priests of every sepulchre claimed for their fane that the entire body of Osiris rested there; for we know that some of the Greek gods, too, possessed tombs, and it is not impossible that

[6] שָׂחַק

[7] For further particulars see Gesenius's Hebrew Dicitionary, German ed., Vol. II, p. 615.

the same god possessed several tombs. We will not be mistaken if we look upon these tombs as cenotaphs, or empty sepulchres, not unlike Christian crypts, erected for the sole purpose of impressing the people with the reality of the god that had died and come to life again.

It is pretty certain that the names beginning with *Beth* i. e., "house," indicate the presence of a temple. Beth-Lehem is the city where stood the house of Laham (i. e. a temple of the god Laham) and in the same way Beth Shemesh must have been the site of the temple of the sun

SHRINE OF SHAMAT.
Possibly the Tomb of Samson.

god, Shamash. It was situated right between Zorah and Eshtaol and we are told that there, too, (i. e., between Zorah and Eshtaol) was the tomb of the Manoah tribe where Samson lay buried. This sepulchre may have been near the temple of Shamash or may even have been connected with it, and the probability is that it was just as empty as were all the cenotaphs of Egyptian and other Gentile gods.

In the *Recognitions of Clement* (X, 23) it is stated

that the tomb of Zeus is shown among the Cretans, and we read further (*ibid.* 24):

"But also the sepulchres of Jupiter's sons, who are regarded among the Gentiles as gods, are openly pointed out, one in one place, and another in another: that of Mercury at Hermopolis; that of the Cyprian Venus at Cyprus; that of Mars in Thrace; that of Bacchus at Thebes, where he is said to have been torn in pieces; that of Hercules at Tyre, where he was burnt with fire; that of Æsculapius in Epidaurus."

WHY THE RESURRECTION OF SAMSON WAS SUPPRESSED.

Though the Samson legend must have been the ancient Hebrew myth of the adventures of the sun-god, all those extraordinary miracles which savor of pagan divinities have been reduced to deeds of human valor and among other things the most characteristic event of a mythological nature, Samson's resurrection, has been removed. I am convinced that in the original Samson epic the return of the hero from Sheol played a prominent part, for all pagan sun worshipers gloried in their god, because, although at nightfall he descends into hell, he comes out again the next morning unscathed. All sun-hero myths preach immortality on the argument that the sun loses his power in winter and is resuscitated to life in the spring.

The theme of the original Samson legend can only have been the same great legend which at all times and among all nations engrossed the attention of religious thinkers. It is an answer to the question "Is death the end of all?" The legend of the descent of the sun into Orcus and his triumphant return to life is the good tidings that proclaims the eternity of life, and the remarkable stories of the adventures of the sun, be it in the different countries over which he passed or in the several mansions in the sky, form

an inexhaustible storehouse for all kinds of wondrous romance.

This same subject constitutes the most typical feature of all the most important and most popular myths of mankind. In fact we may consider it as the most characteristic type of pagan religion which is still reflected in fairy tales (such as the story of Psyche) and all kindred traditions. Everywhere we meet with a hero who is somehow the incarnation of the deity or a god that has temporarily assumed human form to appear on earth as a helper and saviour. We learn of his troubles and dangers, of the enemies who encompass him and gain an apparent victory over his cause, but finally he overcomes all evil and breaks through the doors of death gaining new life and new strength in his glorious resurrection. Nor is this characteristic feature of pagan myths limited to the sun-god. It appears also in the sprouting and withering vegetation, which temporarily succumbs to the intrigues of winter but reappears victoriously every spring in the field.

It is a remarkable fact which has frequently been pointed out, that while Babylonians, Syrians, Phœnicians and Egyptians believed in immortality, the Old Testament contains no allusions to it. On the contrary, it denounces as an abomination the rites of Tammuz, the god who dies and rises to life again, and condemns to death all wizards and witches who after the fashion of mediums (as instanced in the story of the witch of Endor) used to summon and consult the spirits of the dead. The truth is that the priestly redactors were animated with a zeal for a pure monotheism and a contempt for all pagan institutions. They were convinced that Yahveh had revealed himself to Moses as the one and only true God, and so they looked upon all traces of polytheistic customs in their traditions as backsliding into the ways of idolatry. It is natural therefore that they would not countenance in their Scrip-

tures such features or doctrines as would indicate that their fathers had sanctioned the fables of the Gentiles, and they would necessarily omit the resurrection story of Samson which reminded them so much of the resurrection of Tammuz.

The immortality idea could not be suppressed for any length of time and so it asserted itself again in the apocryphal books which constitute the most important link between Judaism and Christianity. They contain the seeds from which Christianity developed and also explain how later Judaism adopted a belief in the immortality of the soul, which, however, has been purified of the pagan elements attached to the Babylonian view, so closely connected with the mythology of Istar and Tammuz and the superstitious practices of spirit conjurors.

THE REDACTION OF THE SAMSON STORY.

The treatment of the Samson legend fairly characterizes the general work of a late redactor. It is firmly established that the leading minds among the Jews in the Babylonian exile were zealous monotheists. They hated mythology, polytheism, and the worship of idols in any form. They spurned the paganism of the surrounding nations as well as in their own tradition. And so in collecting their sacred literature, they edited the several scriptures in a rationalizing spirit. Far from being credulous, as freethinkers usually represent them, we insist that they were the rationalists, the freethinkers, and iconoclasts of their age. And so they either cut out the mythological element as pagan superstition or humanized its supernatural features, or explained pagan institutions as apostacy.[1]

[1] Such passages as Judges ii. 13, or iii. 7; iv. 1; viii. 38, etc. are of Deuteronomic origin and, it seems to me, indicate omissions from the sources which the priestly redactor still had at his command. The original sources from which he drew his account were not yet purely monotheistic and must have related how the Israelites worshiped not only יהוה but also Baal and

It is characteristic of the Bible that with very few exceptions fables and folklore in their original form are absent, and the cosmological stories have been simplified into a dry report of a six days' work of creation, yet some traces of the originally mythological character of the ancient Hebrew legend have been preserved in the Old Testament, in spite of the attempt at their obliteration.[2]

Nothing was more odious to the reformers of Judaism than the pagan ideas incorporated in the Tammuz ritual, which consists in the bewailing of the dying god, and shortly afterward in the celebration of his resurrection, a kind of Babylonian Good Friday with its subsequent Easter festival. The absence in the Old Testament of any allusion to a belief in the immortality of the soul finds its easiest explanation in the theory that all references to it have been carefully removed, and so it is in keeping with the general tendency of the redactor's work that the Samson story should have been cut short where it became too similar to the myths of pagan deities such as Tammuz, Adonis, and Marduk, who descended into the realm of the dead, broke open the gates of hell, and returned victoriously to the land of the living. Thus the Samson story by being rationalized became a torso. It has been deprived of its original meaning and has simply been reduced to the story of a rollicking bravo, whose sole merit consists in having done great injury to the Philistines.

CONCLUSION.

From all that has been said of the Samson story we must grant that it resembles not only the pagan solar myths and the fate of the dying gods, but also the life of

Astarte. Our redactor ascribed all the misfortunes that befell Israel to the worship of other gods, and he selected with preference the heroes of Yahveh worship for national commendation.

[2] See the author's articles "The Fairy-Tale Element in the Bible," *The Monist*, XI, p. 405; and "The Babylonian and Hebrew Views of Man's Fate After Death," *The Open Court*, XV, p. 346.

Christ in whom in the course of the religious development of mankind all these weird and mysterious notions have found their final expression. But the main event without which the story of the Crucified would be a tragedy—the resurrection—is missing in the Samson story.

While the Samson story as we have it is a torso, and can as such be regarded as satisfactory neither from a religious nor literary standpoint, it is nevertheless a most valuable relic in the history of the evolution of religious ideas. The story as it stands has no doubt been mutilated and has suffered from the hands of monotheistic zealots, who in their well-intentioned anxiety to cut out the pagan element have removed its most characteristic features, yet there is enough left to give an approximate idea of what the ideal of a divine incarnation had become in the phase of Danite civilization. We still feel the thrill with which narrator and hearer were warmed while thinking of the irresistible Samson. We enjoy the very sound of the Hebrew original, most poetic in those fragments which must be deemed most ancient, and so we will naturally look with reverence upon this interesting religious document for we know that the hero who is represented by Heracles, Izdubar, Odysseus, Siegfried, Mithra and others, is a preliminary and tentative formation of that great ideal which found its final completion in the Christian idea of the God-man, Christ, the judge who at his second advent is to sit in judgment over the quick and the dead, the King of the world to come when there shall be no misery, no want nor worry, and no death.

There is one point only to be added for the purpose of anticipating a misconstruction of the significance of our results. The similarity of the Christ story to pagan legends does not lower Christianity to the level of paganism; but, on the contrary, it raises paganism to the dignity of genuine religion. Pagan myths, in spite of their crudities,

are born of the same yearning, the same devotion, the same hopes. We do not say that paganism and Christianity are on the same level, for they are marked by decided differences. Paganism belongs to the period of nature worship while Christianity characterizes the age in which an appreciation of the soul establishes a contrast between nature and spirit. As a result of these differences the Christian version of the God-man discards all those features which are all too human and all too natural, and savor strongly of materialism, translating the story into that conception of spirituality which pervades the entire religious atmosphere of the age.

Our treatment of the Samson story conveys a lesson of no mean importance, and one that is gradually being recognized among leading theologians, namely that comparative religion and higher criticism will considerably modify our religious faith.

Some pious people in their well-intentioned anxiety for the holiest ideals of mankind denounce research as ungodly and shun it as if it were sinful and a work of the evil one. They foresee the coming change and feel a lack of strength to adapt themselves to it. Yet the change is unavoidable. It would be better for them had they less belief in the letter and more faith in the spirit. If the results of scientific investigation are wrong we need not worry, for they will soon be refuted; but if they be the truth, no power can prevail against them. And if they are true, they can not be evil, for the truth is of God—perhaps not of the God of a sectarian interpretation of religion, but of the God of truth, the God of honesty, the God of veracity, the God of science.

Science is not a human invention. Science is a revelation of God, and in the field of religion science is destined to accomplish the work of a great reformation. Science will mature our religious longings and purify our faith.

Comparative religion will broaden us, and criticism is the refining furnace which will enable us to separate the gold from the dross.

With better and more exact knowledge we shall need a new interpretation of our faith, but the new interpretation will be as much the result of historical development as the present is the outcome of the past. The religion of the future will be in spirit the same as the religion of the past. Indeed, if we take mankind as a whole we can say that the religion of the future will be this selfsame religion of the past with such corrections or alterations as the present will have to add thereto.

We close with a quotation from the apocryphal book of Esdras (1 Esdras iv. 38), a passage which would have deserved a place in the canon. It reads:

"As for the truth, it endureth, and is always strong; it liveth and conquereth for evermore. With her there is no accepting of persons or rewards; but she doth the things that are just, and refraineth from all unjust and wicked things; and all men do well like of her works. Neither in her judgment is any unrighteousness; and she is the strength, kingdom, power, and majesty of all ages. Blessed be the God of Truth!"

ERASMUS'S PLACE IN THE HISTORY OF PHILOSOPHY.

IN his *Renaissance Types* W. S. Lilly asserts "that since the origin of Christianity there are perhaps only two other men—St. Augustine and Voltaire—whose influence can be paralleled with that of Erasmus." These two men lived, like Erasmus, in periods of transition. Another interesting coincidence is that their writings, and especially their correspondence, give us the most vivid image of their times. They not only exerted considerable influence upon their contemporaries, but they have been effective instruments in moulding the mode of thought of later generations. Their influence is still a potent factor in more than one respect.

Neither Augustine nor Erasmus was conscious of the fact that his labor would affect almost every thinking representative of the human race for centuries. Erasmus was, indeed, no professed or systematic philosopher, but the history of philosophy cannot neglect to take serious account of his lifework. One of his biographers, Nisard, in *Renaissance and Reform* has declared that the whole Renaissance of western Europe in the sixteenth century converged towards him. What is of especial interest to the modern reader, is the decidedly modern ring of his *Lebensanschauung.*

Erasmus is *par excellence* the man of letters of the Renaissance. His works fill ten folio volumes, two of

which contain his personal correspondence with almost every prominent scholar, ecclesiastic, and statesman of his time. These two volumes belong to the most interesting literature of a very interesting period. Letter-writing in the days of the Renaissance was considered an art and practiced as such; any topic of interest, whether theological philosophical, grammatical, literary or esthetic, was treated at length in those *epistolae,* and some attain to the bulk of a pamphlet. It is by no means an easy matter to form a personal acquaintance with each of his correspondents, whose number is almost legion. It is apparent that these letters constitute an abundant source from whence to ascertain Erasmus's opinions in matters of philosophy and theology; on the other hand, we may concede that our witness is not above impeachment in regard to details. These letters were as a rule intended for publication and not so much addressed to the recipient as to the "Republic of Letters" which to a certain extent was realized in the days of the Renaissance "when Homer sang again his Iliad and Cicero and Demosthenes thundered forth their grand orations to an enraptured audience," who considered themselves the rightful descendents and heirs of classical antiquity.

In vain do we search Erasmus's letters and other works for a connected system of philosophy. More than once he expresses contempt for systematic philosophy, claiming that such endeavor leads to pride and arrogance, as St. Paul tells us, "Knowledge puffeth up." He had no affinity with the heroic struggle of the scholastics for one great principle of knowledge. His almost stereotyped expression is "Sophistize." His correspondents follow in his steps. His implacable hatred against the Scotist philosophy was one of the ruling passions of his life. He describes the Scotists as men of rotten brains, black hearts, who forgetting all about the virtues practiced by Christ, try to

save the world by the discussion of such profound questions as "how many angels could dance on the point of a needle?"; "could Christ have entered into hypostatical union with a gourd, an ass, a woman, etc.?" This quotation is taken from the *Encomium Moriae,* and we may feel induced to make allowances on account of the humorous vein of the booklet. In an epistle addressed to Thomas Grey (No. 59 of Nichols's Edition) he asserts that Epimenides has an improved incarnation in Scotus. He tells us that the Cretan prophet during his protracted sleep dreamed of nothing but those subtilties of which the Scotists now may boast. In his younger years he showed a certain respect for Thomas Aquinas, whom Leo XIII styled "the Bulwark of the Romish Church," but under the influence of Colet, as Seebohm in his *Oxford Reformers* proves, he changed his position radically and came to see in the Doctor Angelicus "the most arrogant creature that ever lived—the man who had defined all things in heaven and on earth with such boldness and haughtiness, and had so thoroughly corrupted the teaching of Christ with his profane philosophy." The defining and dogmatizing fury of the schoolmen was as disgusting and repugnant to his skeptic temper in his younger years as Luther's tendency in the same direction was later on. This is not surprising, since Erasmus was conscious of a strong affinity between his conception of Christianity and that of the early fathers, such as Justin, Origen, Jerome and Tertullian, who had no tinge of the dogmatizing mania of the schoolmen and their expounders.

That Erasmus had no inclination toward systematic philosophy we may infer from the fact that he is not at home in the writings of Plato and Aristotle. The philosophy of his heart is the philosophy of Christ, the Apostles and the early Fathers. Erasmus, a thoroughly practical man had no leaning toward metaphysical speculation and

as for his simple theology, the working of the Holy Spirit upon the human mind interested him a thousand times more than the mysterious *processio a patre filioque*. The discussion of this dogma had filled a century with strife and nausea. Erasmus, the ardent lover of peace cherished a righteous grudge against this food of the *rabies theologorum* which he abhorred much more than Melanchthon. *Promovere bonas literas atque reducere ecclesiam ad pristinam puritatem* ("to promote good letters and lead the Church back to its original purity"); this was the work of his life, which he had set himself in early youth. His conception of the work of the Holy Spirit tallies with that of Justin Martyr who recognized the *logos spermatikos* in the writings of heathen philosophers. Erasmus admits (in one of his *Colloquia*) that he feels often enough tempted to pray *"Sancte Socrates, ora pro nobis."* In the writings of Cicero he recognizes an atmosphere of holiness and virtue; he, the keen "anti-Ciceronian," as Scaliger and Bembo called him, is, I believe, the man who of all scholars had the highest admiration for Cicero and entered deepest into his feelings. I quote only one short paragraph from his *Colloquia*:

"Fateor affectum meum apud amicos: non possum legere librum Ciceronis De Senectute, De Amicitia, De Officiis, De Tusculanis Quaestionibus, quin aliquoties exosculer codicem ac venerer sanctum illud pectus afflatum caelesti numine." Nay, even in Horace he detects traces of the *Sanctus Spiritus*. This discovery alone was enough to throw upon him a suspicion of heresy.

While Dante of all the pagans saved only Cato of Utica, who sacrificed life for libery, and Emperor Trajan from the dread Inferno, Erasmus believes that the Creator and Redeemer will apply a more liberal standard to those souls whose ignorance of God's true nature was due only to

their surroundings. This interpretation is not very far from Goethe's idea:*

"Ein guter Mensch in seinem dunkeln Drange
Ist sich des rechten Weges wohl bewusst."

Erasmus was in his days the only champion of broadest tolerance, and in this respect he believed he followed in the wake of Christ, the mildest of men, and of the early Fathers. Christianity in his conception ought to be peace and joy in the Holy Spirit, not strife and struggle. *In necessariis unitas, in caeteris libertas, in omnibus caritas,* was the motto of St. Augustine. Erasmus without urging the first postulate to undue length, emphasized liberty of conscience and world-embracing charity. And nothing convinced him so thoroughly that the Church of his time had been corrupted to the core and needed regeneration and rejuvenation in the fountain head of Christianity, as the spirit of intolerance and persecution prevailing in the *Ecclesia militans* of his days, as represented by Scotists, Thomists, etc.

In a letter to Volzius, written in 1518 and afterwards published as preface to a new edition of the *Enchiridion* he makes this recommendation in order to effect a thorough reformation of the Church:

"A Commission of pious and learned men should bring together into a compendium from the purest sources of the Gospels and the apostles and their most approved commentators, the whole *philosophy of Christ* with as much simplicity as learning; as much brevity as clearness. What pertains to the faith should be treated in as few articles as possible; what belongs to life, also in but few words and so put that men may know that the yoke of Christ is easy and pleasant, not cruel; that they have been

*"A good man, through obscurest aspirations
Has still an instinct of the one true way."
—Translated by Bayard Taylor.

given fathers, not tyrants; pastors, not robbers; called to salvation, not betrayed into slavery." In the early Christian Church, he asserts, bishops and other authorities used to admonish heretics, not burn them. Even in his own days, he thinks, a certain amount of courtesy and discretion in handling of antagonists would do no harm and would contribute considerably towards an amicable settlement of discussions. Even the arch-heretic Arius, he would have tried at least to convince by arguments and not by threatening him with hell-fires—of which theologians should make parsimonious use. In a letter addressed to the archbishop of Mayence he insists that he would exclude nobody from his company on account of their being followers of Luther. "I am," he says, "neither Luther's accuser, nor advocate nor judge. I would not presume to judge, for that is always a matter of extreme difficulty; still less would I condemn. . . . I find that many in our days are only for compulsion, for destroying and extinguishing, though Augustine did not approve of compulsion, unless teaching was combined with it; even against the Donatists who were not merely heretics, but bloodthirsty robbers."

From no other ecclesiastic of that turbulent epoch which Adolph Honorath in his *Leben Luthers* styles *das grobianische Zeitalter,* do we hear the evangel of Christian tolerance in such crystal clearness.

Peace, concord, harmony is the principal tenet of what he considers his "Christian philosophy." If peace could be maintained, he argues, the diffusion of knowledge and the overthrow of superstition will work out a real and lasting reformation. No other state of the Church is in accordance with the spirit or purpose of Christ. The abuses prevalent in the Church should be cleared away, liberty of conscience strenuously asserted; so, he believed, would it be possible to maintain the unity of the Church under its visible head, the Bishop of Rome.

This conception of practical Christian philosophy is always in Erasmus's mind. In a letter to Louis Berus, dated Louvain, May 14, 1521, he uses the same term in connection with Luther's teaching: Luther might have taught "the philosophy of the Gospel" with great advantage to the Christian flock and benefited the world by writing books, if he had abstained from what could not but end in disturbance.

Practical Christianity is Erasmus's ideal, not idle disputations.

"Is it not possible," he asks in the preface to his edition of St. Hilary, "to have fellowship with the Father and the Son and the Holy Spirit, without being able to explain philosophically the distinction between the Father and the Son, or between the Holy Spirit and both the other persons; or the difference between the generation of the Son and the procession of the Spirit? If I believe the tradition of the Church that there are three of one substance, what need of laborious disputation?. . . . In olden times faith consisted in the life rather than in the profession of a multitude of articles. . . At last, faith ceased to be a matter of the heart and was wholly transferred to written documents."

Erasmus's attitude is perfectly clear; he wants the spirit that quickeneth, not the letter that killeth. Critics complaining of the equivocality of his language he could have silenced in Goethe's style: "Wer mich nicht verstehen kann, der lerne besser lesen." He is not against ceremonies, provided they are enlivened with faith and charity. In his *Enchiridion* he wrestles valiantly with the same difficult problem which excited the Hebrew prophets of yore to a white heat enthusiasm,—the wedding of the spirit of simple heartfelt piety to an elaborate ceremonial system. The solution he offers is the same which the seers of Jehovah emphasized: Do everything connected with the ritual in the right intention; then your offerings and

holocausts will be acceptable to the Most High, then even insignificant observances will mean something. In a letter to Colet he explains the motive that induced him to write this tractate: "Enchiridon conscripsi ad hoc solum ut mederer errori vulgo religionem constituentium in caeremoniis et observantiis paene plus quam Judaicis rerum corporalium, ea quae ad pietatem pertinent, mire negligentur." Peculiar to this book is a distinction which he draws between spirit and soul, of which he is so fond that he battledores and shuttlecocks it beyond limits.

"The body is the purely material, the spirit the purely divine, but the soul living between the two belongs permanently to neither, but is tossed back and forth from one to the other according as it resists or gives way to the temptations of the flesh. The spirit makes us gods, the flesh makes us beasts, the soul makes us men." The type of piety which Erasmus emphasizes seems to be largely influenced by Thomas à Kempis's *Imitatio Christi.* This is the more remarkable, as Erasmus never mentions Thomas whose name must have been a household-word in the schools of the Brethren of the Common Life. Like the author of the *Imitatio* he wants the doctrine of Christ pure and simple, and he attributes the corruption of Christianity to its amalgamation with pagan philosophy. What Erasmus conceives this philosophy of Christ, this essence of primitive Christianity to be, we learn from his *Novum Instrumentum,* his most complete work. The message he delivers is almost the same as in the *Enchiridion*: piety of the heart, not pharisaical observances, genuine love of God and man, is the substance of Christ's teaching. The mildness and humility of Christ shall penetrate and permeate our lives and make us, as it were, true reproductions of Christ, according to Tertullian's *Christianus alter Christus.*

He indulges his reformatory vein in his annotations;

he criticizes the well-known abuses of monasticism, the dogmatizing mania of the theologians with the same freedom he had used in the *Encomium Moriae* even with greater vigor—of course without raillery.

In a letter to Leo X referring to his second edition, he rightfully boasts:

"Qui hactenus e putribus lacunis pertubatum quandam et frigidam theologiam hauriebant, nunc ex purissimis fontibus Christi et Apostolorum haurire malunt."

In the boldness of his criticism he follows in the wake of his idolized Laurentius Valla. Valla and Erasmus may be considered the venerable inceptors of Scripture criticism. Of St. Luke's style he remarks, that it is purer than that of the rest of the Evangelists, owing to his acquaintance with Greek literature. The Epistle to the Hebrews, he tells us, breathes the spirit of St. Paul but is not at all in his style. He doubts whether the Apocalypse be the work of John the Apostle. In a note to the famous verse Matt. xviii. 18, "Upon this rock I will build my church," he expresses surprise that anyone should have so perverted the meaning as to refer the words exclusively to the Roman pontiff. On Matt. xvii. 5, "Hear ye him!" he remarks: "Christ is the only teacher who has been appointed by God himself. Such authority has been committed to no theologian, to no bishop, to no pope or prince." The statement in Acts ix. 43, that Peter lodged with Simon the tanner inspired the following passionate exclamation: "Oh, how great a guest, the very chief of Apostles to lodge with so humble an entertainer! In our days three royal palaces scarce suffice Peter's successor." He expresses a timid doubt, as to whether matrimony was known as a sacrament to Augustine or Jerome. We cannot fail to see that the principle of interpretation he applies is that of common sense. He wants to establish the meaning of the text grammatically and bids farewell to the allegorical method

of Origen, of which he had made use in the *Enchiridion*. He urges individual liberty of interpretation provided the established dogmas of the Church are not attacked.

As for criticism of style, he is the most enlightened man of the Renaissance. We would cite his admirable tractate, *Ciceronianus sive de optimo genere dicendi*. The first necessity, he holds, is the adequate expression of the idea, no matter whether Cicero would have used the same words or not. The apish imitation even of the best stylist Latium (and he might have said "the world") has produced, he ridicules with subtle irony and an amount of vehemence rarely found in his writings. There was, after all, no perfect Ciceronian in his time. He introduces a quasi-Ciceronian who works six long and dreary nights to turn out six sentences of doubtful Ciceronian Latinity. So he advises those "Ciceronianissimi" to desist from a chase after will-o'-the-wisps and rainbows. The main thing is to have ideas; words will follow naturally.

In the preface to the second edition of Jerome's works he gives us his idea of "the critical sense" which he proclaims the sole and supreme judge in matters of contested authority. He does not care a whit for the stupid objections of some people, that the same author has not always the same style. The style of old age is different from that of youth as a comparative study of Cicero's orations will prove. Sometimes, he admits, we vary our style intentionally to adapt it to different subjects. Nevertheless, the style remains the reliable touchstone and it is easy for the experienced critic to recognize in the old man the features of the boy. As for Jerome, to adduce a concrete example, his splendid gifts, his power of combination, of pleasantry, would defy the rarest skill of imitation.

Erasmus, however, speaks often of philosophy without an epithet, but he means by the word what the later and more distinctly ethical schools of antiquity meant—not a

speculative theory about reality, but the art of living according to reason. His philosophers are not Plato or Aristotle, but the "moralists" Seneca, Plutarch, Cicero. His admiration for Plutarch's ethical writings is indeed excessive. Plutarch touches an harmonious chord of his soul. Like the great biographer he pays a good deal of attention to the smallest details of conduct. Let us listen for a moment to the valuable practical advice he administers to his young friend Peter Gillis (Nichols, p. 462):

"Lay down for yourself a definite scheme of life, determining what you want to do and at what hours, and do not crowd one thing upon another, without finishing what you begin first. In this way you will lengthen your day, which is now almost totally lost. And whereas you find fault with your memory, you will do well in my opinion to make a diary from each year (it is no great trouble to do so) and note down daily in a word or two if anything has taken place that you wish not to forget. I beg and entreat you to accustom yourself in the conduct of life to be guided by judgment and not by impulse. If you have made any mistake, consider at once whether you can set it right in any way or diminish the evil; that you will do better, if you do it quietly than in an excited state. If there is any remedy, apply it; if not, what good can come of anger or sorrow except that you double the evil by your own fault?"

In the *Adagia* he gives us many quotations from the Stoics. Their *sustine et abstine* he has always on his lips; he is inexhaustible in the praise of the four cardinal virtues. The imperturbability of mind, of which the genuine Stoics boasted, Erasmus prized very highly. Their *secundum naturam vivere* he emphasizes with great energy. Here, I believe, it is not amiss to remark that Justin Martyr defined the Christian life as *secundum naturam vivere*.

His Stoic maxim Erasmus applies as a corrective of one of the great ethical aberrations of the Church. Because

it is against nature he abhors an enforced celibacy. Nothing to him is more against the laws of nature than an old maid. Matrimony is the natural state for adults. He believes that it affords a thousand times more opportunity to practice all the virtues of Christian life than celibacy. About matrimony nobody has written with more reverence and more elevated sentiment. Without doubt this celibate priest has given the matter a good deal of tender interest. I fancy he loved children dearly and his soul was filled with bitterness on account of his being excluded from the earthly paradise of matrimony. He expresses his opinion that nobody should be allowed to take permanent vows before the completion of the fortieth year.

Of the same principle *secundum naturam,* he avails himself to inculcate his ideas of civil government. He shares the standpoint of Thomas More in his *Utopia.* To him it is the consent of the people that gives and takes away the purple. He does not hedge but speaks out his mind plainly in books dedicated to crowned heads and candidates for a crown. He anticipates the famous motto of Frederick the Great, "The king is or ought to be the first servant of the State." It goes without saying that with most of the princes of his time he has reason to be dissatisfied. "Christian princes and especially the bishops and the pope should set an example of Christian humility and forbearance." Discussing the horrors of war, he reminds us of the twentieth century movement for disarmament. In a letter to Anthony of Bergen, Abbot of St. Bentin, he exclaims:

"For us who glory in the name of Christ, of a master who taught and exhibited nothing but gentleness, who are members of one body and are one flesh quickened by the same spirit, fed by the same sacraments, attached to the same head, called to the same immortality, hoping for that highest communion, that as Christ and the Father are one,

so we may be one with him—can anything in the world be of so great concern as to provoke us to war, a thing so calamitous and so hateful, that even when it is most righteous, no truly good man can approve of it? Think, I beseech you, who are those employed in it? Cutthroats, gamblers, libertines, the meanest hireling soldiers, to whom a little gain is dearer than life—these are your best warriors."

Of such reckless adventurers he has given us a graphic character sketch in his colloquy between the soldier and the Carthusian monk. He is an ardent advocate of very moderate taxation. Articles necessary to the poor man ought to be exempt from taxes. Let it be the rich to support the state by liberal contributions, not the poor people who have to toil for a scanty living. Occasionally we find in his discussion of economical questions a leaning towards the single tax. On nearly all questions of State policy he is in perfect harmony with his friend More.

In truth, Erasmus in his ethical temper and opinions, is as much a reviver of Stoicism, as he is of early Christianity; the Christian and the Stoic influences curiously merge in him; and where they seem to conflict, it is not quite invariably the traditionally Christian tendency that prevails.

But Erasmus was by no means a Stoic in the strictest sense of the term; their division of mankind into two classes of complete sages and complete fools was abhorrent to his gentle character. He has no particle of that extravagant idolatry of fame which characterized the Italian Renaissance and which infected even men of the moral grandeur of Ambrogio Traversari. He never forgets that Christ has taught us gentleness and humility. But his conception of Christian humility differs very much from that of Bernard of Clairvaux. With Erasmus, common sense did not allow him to fall a victim to the subtle allurements of

asceticism. For Simon Stylites and St. Hilary he would have entertained a feeling of mingled pity and contempt. His ethical doctrines are thoroughly humane, but the humanity he stands for, is that of Christ whom the prophets called the Son of Man.

A pagan sage whose reputation among Scotists and Thomists was very poor,—I am speaking of Epicurus,—Erasmus defends very skilfully in his dialogue *Epicurus*. Epicureanism in the best sense of the word is the sure path leading to virtue and happiness. He is bold enough to claim the "adorable author of Christian philosophy" for the school of Epicurus. No wonder he was put down as a blasphemer like Lucian, as a "perverter of morality" like Epicurus.

Another ancient school of thought with which Erasmus's practical nature made him feel some sympathy was that of the Skeptics. His mind, as Drummond observes, was essentially of the skeptical and inquiring, by no means of the affirmative and constructive order. We may believe Erasmus when he states in the introduction to his *De libero arbitrio,* the one of all his works which comes nearest to dealing systematically with a definite philosophical problem:

"I have such a horror of dogmatism that I would easily declare myself a member of the Skeptic school wherever I am not met by the authority of Holy Scripture and of the Church to which I willingly submit my reason in all things, whether I understand what it prescribes or do not understand." The work from which these words are quoted is a tractate of small size. Erasmus defends the doctrine of the Church in its mildest form and maintains a moderate freedom of the will. Luther, he explains, in order to magnify God's mercy, abridges his justice. Palpably erroneous and unreasonable, he says, is the Reformer's dogma, that even those who are justified can do

nothing but sin. Luther, as is well known, asserted that the best works of the justified are venial sins according to the mercy of God and mortal sins with reference to his justice. Erasmus attacks Luther's dogma of justification through faith alone, wherein he sees the most dangerous snare to human weakness, many following the Gospel defending all kinds of vice and extravagance, pleading that they are safe, as long as they have faith.

The tractate makes use only of well-known and well-worn arguments, and contributes very little towards the solution of the problem of will. Erasmus was a man of sound intellect and clear insight rather than of profound speculative talent. He did not like the task assigned to him (probably by Henry VIII) and had no exaggerated opinion of his performance. He was aware that the problem is all but unsolvable. The authorities of the Catholic Church seem to have recognized this instinctively, and have dogmatized only negatively, condemning for instance the doctrine of Luther, Calvin, Jansenius and others. It is worth while to note one feature of Erasmus's method of argumentation. His availing himself almost exclusively of arguments based on Scripture texts, is not as some biographers have supposed, evidence that he slighted the tradition of the Church. His antagonist refused to recognize any other arguments, and Erasmus tried to meet Luther upon his own ground and to use only authorities which Luther would accept.

While in his dogmatic controversy with Luther, he was on dangerous territory, because of his antipathy to dogmatism and controversy; when writing about educational ideas, he was, as it were, at his ease.

Erasmus, the thoroughgoing individualist, proclaims the individualistic principle in education. "Education of their children," he asserts, "is a duty that parents owe to the commonwealth and to God." Fathers who give pesti-

lent citizens to the State are nothing better than professional murderers. Some parents bring heavy responsibilities upon their heads by spoiling their children, treating them as playthings. In individual progress three factors are of vital importance: nature, method, practice. (Here he follows Aristotle.) By practice he understands the free exercise on our own part of the activity which has been implanted by nature and is furthered by training. He is well aware of the interaction of physiological and psychological factors. The chapter on the nursling emphasizes the necessity of prenatal education of the child and reads like a chapter of *Emile*. Parents, he argues, should follow the example set by animals and become themselves instructors of their children. As for the breadth of the educational ideal he anticipates Amos Comenius; in matters of discipline and attractive methods of teaching he is a forerunner of Froebel. His ideas on school discipline are those of the most enlightened pedagogues of the twentieth century. The monastic schools he condemns as seminaries of stupidity and superstition.

Schola sit publica aut nulla! Above all the good teacher ought to have a cordial love and sympathy for his pupils.

Our hero—his superhuman struggle against the *vis inertiae* entitles him to this name—is one of the first educators who comprehended the importance of politeness. It was, of course, the moral, esthetic side of courtesy which attracted him, not the outward etiquette. He has that kind of politeness in mind "which is akin to love."

Erasmus unswervingly advocated the liberal instruction of women and allowed them full participation in the literary treasures of recovered antiquity. Only one privilege he would not concede them; he claims, they are utterly unfit to lead the education of boys. In this instance he falls back upon his great principle, *secundum naturam*

vivere, maintaining that it is against the law of nature t allow women to rule over men.

Now, we come to a point often misunderstood, viz. Erasmus's attitude concerning modern languages an nationalities. The vernacular tongues, so he advises hi contemporaries, should be picked up by practice and tak no time in the curriculum. The dialects of his age he con sidered not worth while studying in school, as they lacke the element of stability so conspicuous in Latin. In th preface to his *Novum Instrumentum* he expresses the ar dent wish that the Holy Scriptures should be translate into all languages and dialects, the clergy should cultivat a deeper knowledge of their respective vernaculars in orde to work with greater success in the vineyard of the Lord The Holy Roman tongue seemed to be the only remed against the Babel confusion of shifting and conflictin dialects. Erasmus addressed himself to all scholars o his age and Latin still held its own as the universal lan guage, the veritable Volapük. Furthermore, the vernacu lar was then to some extent used as a protest against th unity of the Church and there was nothing to which h was more averse than to splitting up the Church accord ing to nationalities; nothing he detested more than "cæsaro papism." He was convinced of the brotherhood of th human race, following in this point the philosophy o Christ and St. Paul.

Character and usefulness in life, not dry scholarshi was his aim.

In his book *De duplici copia rerum ac verborum,* whic he wrote for Colet's school, he emphasizes the knowledg of things. Language is to him the vehicle of our knowl edge; corruption of language will necessarily lead to cor rupt knowledge.

The attainments of the students will to a great exten depend upon the qualification of the teacher.

It is only fair to note Erasmus's limitations. He seems to be destitute of intelligent appreciation of art. The great masters in sculpture and color whom Julius II employed he does not mention at all. He speaks slightingly of the choruses of the great Greek dramatists, he considers them artificial and extravagant.

Although, as we have seen, two currents of philosophical thought, those of early Christianity and Stoicism, with a tinge of Epicureanism, meet in Erasmus, he was, I believe, not far removed from the intentions of the Founder, "whose yoke is easy and his burden is light."

WALDEMAR KLOSS.

ST. LOUIS, MO.

CRITICISMS AND DISCUSSIONS.

LITERARY CORRESPONDENCE.

FRANCE.

Under the title *L'ame et le corps** ("Soul and Body") M. Alfred Binet offers us a significant work to which the name and position of the author will lend particular interest.

Very likely he was lead to write this volume by a craving to explain to himself as physiologist and psychologist, his true position with regard to the ever vital question implied in the words so simple and yet so fraught with comment: matter and mind.

It is impossible to treat this subject without taking into consideration the ancient and grand metaphysical systems, spiritualism, materialism, idealism. If we study the question closely we find that a philosopher seldom, nay hardly ever, adheres closely to any one of these systems. The temptation to see things in different lights is easily yielded to, and it is such a desirable inclination that no one should be reproached for having followed it.

M. Binet handles the problem as a broad-minded and independent investigator. His analysis is rigorous and the development of his line of thought is unfolded with perfect clearness. "We know nothing but sensation," is the first leading proposition. The properties of matter are resolved into sensations; objects are to us only an aggregation of sensations. It is impossible to explain matter as is commonly done, in terms of motion, since all our sensations have one and the same psychological condition: the excitation of a sensory nerve. The physicist who imagines he can eliminate the subjective element by resorting to a registering apparatus only replaces one sensation by another. The mechanical conception of nature is but an "ingenious realism." Now, by analyzing sensation we find

* Paris: E. Flammarion, 1905. Price, 3 fr. 50.

in it two elements: the *physical impression* and the *act of consciousness*. In contradiction to the idealists, to whom he occasionally comes very near, M. Binet thinks that the object of sensation is indeed of a physical nature, and that through sensation we enter into direct relation with the objects themselves: accordingly things would be such as we perceive them.

So henceforth the words: images, emotions, consciousness, all become clear. That which forms the spirituality of the idea, of the image, is the accompanying act of consciousness. As for emotion, the intellectualistic theses of William James and Lange render it comprehensible by expressing it in terms of consciousness; it is nothing more than the perception of organic states. Even the will, according to Mr. James, is only the perception of sensation originating in the muscles. These definitions would exactly agree with Binet's intellectualistic theory, since he tries to "reduce all intellectual conditions to physical impressions accompanied by consciousness." In this manner everything might be explained as a certain mechanism reflected in the mirror of consciousness. Binet, however, is perplexed about this simple explanation; he wonders whether desire and consciousness do not represent something foreign to the physical world, but which might be part of the ethical domain.

Thereby he frees himself from the criticism so often objected to Condillac's sensualism. He opens a window to let in the light, but it opens on the unknown. For how is it possible to grasp that something? What may it be? Consciousness, according to his idea, does not give us the subject. Sensation implies consciousness, but not a conscious subject; such a subject would be but an "object in disguise." In short this doctrine is neither phenomenalism nor substantialism. We only perceive *noumena*. The relations that exist among objects belong to the group of objects; they are not created by consciousness. There is no "actual" consciousness without an object. The concept of consciousness cannot supply any lasting connection whenever consciousness is not realized; if this connection exists, it can only be in the permanency of the nervous system. The unconscious may only be understood as Leibnitz defines it, i. e., as the limit to the decrease of consciousness, or as that which is purely physiological.

Finality opposed to mechanism, such is, according to the above principles, the expression of what constitutes the characteristic of psychology and ethical science. "Psychology," writes Binet, "is a

...atter endowed with the prop-

...ws that the phenomena of con-
...ena." I experience a sensatior
... is matter and consciousness i:
... as inseparable as motion fron
... distinction made by Aristotle be
... the problem of the union of soul an
... ciple of heterogeneity formerly re
... separating the two domains, need b
... there exists an element common to both
... in its first assumptions) commits th
... sciousness as independent of the object o
... matter. Materialism, "that metaphysics o
... be metaphysical," makes the mistake o
... that consciousness originates in the objec
... that the object is the result of consciousnes
... elism (Bain) there remains the false notio
... dismissed) that a conscious phenomenon is

... hypothesis about the connection between the min
... may satisfy the two following conditions
... sciousness can originate only in the brain and b
... the other that consciousness remains ignoran
... phenomena and only perceives the external object whic
... vibration. But how is it that the nervous vibra
... the properties perceived in the object should b
... To this Binet answers that physical properties ar
... in the vibration; the latter is both the expressio
... which produces it and of the nervous apparatus whic
... We find in it not only a transposition from the phys
... mental, but also an analysis of the impressions. It is
... law that consciousness does not note what is constan
... changes. It being admitted that the nervous current ir
... the properties of the object, our partial sensitiveness coul
... that which represents some kind of cognition in th
... current and this operation might be equivalent to a trans
... of the current into perception, image and idea.

However ingenious this explanation may be (which is meant t
... to consciousness) I understand very well how consciou:
... is a mirror, how the diaphragm of the phonograph is affecte

by the exciting object, but there remains for me to learn how consciousness can look at its reflections in its own mirror, or listen to its voice in its own phonograph. Binet himself hints at the conjecture that "consciousness has the faculty of finding out in the effect what was in the cause."

Subject-substance, subject-action and subject-form are equally difficult to conceive, but reappear none the less readily as soon as we try to touch bottom in our speculations. We must not be too exacting, we must be content with precise analysis, or a proper arrangement of facts. M. Binet does not pretend to solve the problems of metaphysics; his particular aim is to throw light on the relations between the soul and the body, and we well conclude that he has succeeded in treating this old but ever new problem in an interesting and original manner.

* * *

M. Alfred Fouillée in completing a system of philosophy has undertaken to build up what he calls a *"morale des idées-forces."* Before proceeding, however, he prepares the ground, and the title of his present work, *Les élements sociologiques de la morale** means that though social science may provide us with a considerable amount of material for this construction, yet by itself it is unable to construct. It is said that ethics is to sociology what medical science is to physiology, a technique. M. Fouillée refuses to see ethics in that light and to liken this supreme art, which shows us the highest aim we can strive for, to these special techniques, whose ends are particular.

According to his idea the character of ethics is at the same time radical and universal; it is not an action independent of speculation, but rather a speculation put into action, an enacted psychology and philosophy. We must conseive an *ideal* direction in order to fashion our conduct according to it. Scientific ethics will surpass Kant's formalism, and realistic positivism, according to which social interest is after all conclusive; it must conceive some idea connected with the foundations of morality and affirm its "objective" validity. The particular sciences must indeed supply the sociological, biological or cosmological elements of ethics; they may in fact also teach us what we must choose, if we ought to choose anything at all;—but psychology and general philosophy alone can determine the real objectivity and validity of this "ought." Finally ethics will be called upon to settle definitely the value of the act, the ultimate object of

* Alcan, publisher.

will, "as far as it is possible for us to represent it to ourselves." "The way in which man will act in a difficult crisis, will always depend either on radical psychology, or on general philosophy, or on that substitute for philosophies, called religion. Never will man devote his life, never will he sacrifice it, except for what he will have considered as the highest ideal which, according to his abilities, any being gifted with the power of thought and will may attain."

Such are the conclusions of the sketch. My intention is not to criticize it, but only to call attention to a few points. I have often endeavored to get a clear understanding of this ethical question; it may seem useful to consider it from different sides and to separate its problems. In the first place I should consider the formation of customs; in the second, the formation of doctrines. There is no doubt in my mind as to the important influence of facts, inventions, discoveries, enterprises, either in the history and evolution of morality, or in the rise of ethical doctrines, not forgetting, moreover, that the systematization of moral facts denotes a logical effort, an act of pure intelligence about notions gathered through observations. I have mentioned before in this magazine in connection with a work by M. Lévy-Bruhl, that the first revolutionists in ethics are not the theorists, but the men of action. It is true that I include among the latter the great leaders of souls, and I should not like to be accused of denying the efficacy of ideas and of religions. Neither do I care to overrate them. I deem, for instance, that the discovery of the steam engine has done more to change our customs than the *Critique de la raison pratique,* and, taking another instance, I wonder whether individualism, so much in vogue to-day, is not helped on by the independence which assures to modern man facility in traveling, the power of shifting his abode from place to place, of investing his money in foreign countries, in short, in freeing his person and his means of existence from the narrow bonds of his nationality. The railroad, the stock-company, the check, etc., are real factors of practical sociology.

I know very well that the whole problem does not consist in this! It consists in prescribing to others or oneself the duty to be done in the tragic conflicts or even in the ordinary events of life. We must act according to some principle, and I have repeatedly contended against the pretentions of an ethical system unwilling to fall back on some philosophy. So I would finally establish a new distinction between what I shall call the imperative that is *felt,* and that which is *demonstrated.* I think I have shown in some other

work that the intuitive imperative, the feeling of obligation, may be explained by the action of our psychological mechanism; as for the proof, the demonstration of the object of duty, that is the study of critical philosophy, and I feel grateful to M. Fouillée for reminding us of that simple truth, which sociologists of our time seem inclined to forget.

Faith can remove mountains, ideas lead the world. These old sayings have been amply developed in M. Fouillée's system, and form the foundation of his psychology. There still remains the accomplishment of his ethics of *idées-forces,* which he promised us. I foresee the difficulties and snares of it too well, not to await it with curiosity, and I know the shrewdness and penetration of the author too well not to make every effort to understand him.

* * *

I must not omit to mention here two works, the one by V. Delbos, *La philosophie pratique de Kant,** the other by M. Brunschweig, *L'idéalisme contemporain.* To the work of M. Delbos, so particularly versed in Kant's philosophy, I must add the beautiful and highly appreciated study of Th. Ruyssen, on Kant. I must also mention in this connection the clear and precise posthumous work of Marius Couailhac, *Maine de Biran.* No doubt the latter will seem very attractive to the readers of *The Monist,* for the character of Maine de Biran is particularly interesting. He forms the bridge, we might say, between the sensualism of the eighteenth century and modern psychology. In him we find opposite tendencies superimposed rather than conciliated. "He *believes,* he wishes to *know,*" and finally surrenders his soul to God. Such, in brief, was his attitude towards Christianity.

It seems a little late to mention *L'année philosophique* of 1904, but it would be wrong to overlook the continuation of an essay by F. Pillon, "La critique de Bayle," a critique of the attributes of God, in which observations about "the confused atomic theory" professed by many modern scientists, are to be gathered with great profit to the reader.

Ch. Renouvier, the head of the school that has *L'année philosophique* for its organ, has left a posthumous work which has just been published by his disciple and friend M. Louis Prat, *Critique de la doctrine de Kant.*

In this, says M. Prat, Renouvier obliges the founder of Cri-

*This work and the following are published by F. Alcan, Paris.

tique to disclose his secret. And this secret according to the author is that Kant's philosophy is nothing but disguised pantheism.

I certainly do not doubt the learned critic's ingeniousness nor disregard the force of his arguments; but I cannot help remarking that in metaphysics, there is always room for surprises!

Let us pass on to psychology. In this line a very scientific work by Dr. E. B. Leroy is to be recommended: *Le langage,* an essay on the moral and pathological psychology of that function. The volume is divided into four parts treating the subjects, Signs and Different Kinds of Speech, Perception of Speech, Utterance, and Verbal Hallucination. Under these titles are classified a great number of interesting questions which I cannot even think of reviewing here. In some respects, the whole work is a thorough study of image in its various forms and different uses in speech, reading, writing, and hearing, in health as well as in a pathological condition.

Besides the rare bits of information that this work gives us about speech itself, a general conclusion may be drawn (and the author does not fail to point it out) concerning the question of the connection of speech, considered as a function, with the generality of psychological phenomena. Far from limiting speech according to common conception to the expression of thought, and far from finding in it only a process of intellectual improvement, a superfluous function, a mere accomplishment, Dr. Leroy demonstrates that it is deeply rooted in the tendencies and instincts of the human mind. Not only is speech deeply rooted in the whole psychological mechanism of each particular individual, but personal reaction also plays a considerable part in perceived speech. Our entire personality comes into play, in the comprehension of the words of another, and individual reaction in pathological cases may go so far as to completely and systematically deform the perception even to the point of itself creating false interpretations.

There remains M. Ossip-Lourié's *La psychologie des romanciers russes du XIXe siècle* to be recommended. Himself a Russian, or at least half Russian, this author is just the man to have treated the subject, and he has managed to do it in an instructive and agreeable manner. It is to be observed that the Russian novelist usually appears to us the principal character of his own stories. And how many "irregular characters" among these writers! That is the first thing which strikes us. Gogol tends to mysticism and folly, Dostoievsky is an epileptic, Garchive is mentally unbalanced, not to

say a lunatic, Gorki an unsteady fellow, almost a tramp, even Tolstoy shows breaks in his logic.

With the finest emotional and descriptive qualities, they all lack the art of composition, as well as lofty imagination. There is no trace to be found either in themselves or their heroes of a disciplined character, a wisely conceived plan and of a firm will ruling over the conditions of life. They are all laboring under a diseased will. Their aspirations are vague and uncertain. These conclusions, it seems to me, throw a light on events which are now in progress. But, I think we can not understand them unless we consider the influence of foreign elements; that is one of the *unknown* factors of the Russian problem.

* * *

Various circumstances have prevented my studying M. Paulhan's last work, *Les mensonges du Caractère,* as I should have wished. I ought not to review it incidentally or superficially, so I shall only mention it to my readers. This volume forms, with other recent works by M. Paulhan, the most thorough study of character that has ever been written. As indicated in the preface of the book, "the author tries to prove that simulation is a fact both universal and necessary; he examines the general mechanism of it, and endeavors to determine its meaning and its import. The falsehoods of character are connected with general views concerning man and the world."

LUCIEN ARRÉAT.

PARIS, FRANCE.

MATHEMATICAL OCCULTISM AND ITS EXPLANATION: A SYMPOSIUM.

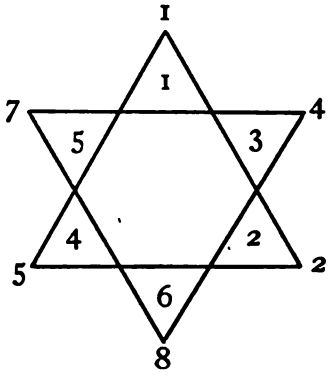
EDITORIAL INTRODUCTION.

The peculiar interest of magic squares and all *lusus numerorum* in general lies in the fact that they possess the charm of mystery. They appear to betray some hidden intelligence which by a preconceived plan produces the impression of intentional design, a phenomenon which finds its close analogue in nature. We have given some thought to this peculiarity of mathematics and have received communications with reference to former articles of ours which will be of interest to our readers.

The first by Capt. J. F. C. Fuller is an exposition of the name

"Elohim" as expressing in its original Hebrew spelling the number π; the second is a comment by Mr. W. S. Andrews on the recurring number 142857 which is the decimal expression of $^1/_7$; and the third is an article by Professor William F. White on this same peculiar number in its multiples and other combinations.

We expect to return to the subject again but we would say at once that the number $^1/_7$ which is equal to the recurrent decimal 0.142857 can be more impressively put before the reader in an occult fashion, by writing the numbers on a hexagram constructed by two interlaced equilateral triangles. This is an old magic figure commonly called the shield of David and is frequently used on synagogues. Start at any point with 1, and write 2 at the other end of the same line; place 3 between 1 and 2; then write on the corner directly opposite each one, its complement to 7. Next write in the same order associated with these figures, the unit numerals omitting, however, 3 and all of its multiples. This will make a new set of figures in which the sum of any two opposite figures will amount to 9. Having created a magic hexagram with this double set of figures, all the miracles which are mentioned by Mr. Andrews and Professor White are thus explained in unadorned mathematics.



As to Capt. Fuller's magic pentagram, I would say that the result is produced not without forcing the issue, for we ought to bear in mind, first that the zeros cannot be canceled without doing violence to the number value of Hebrew letters; in the second place that the order is inverted and runs contrary to the Hebrew way of reading; and thirdly, that in Captain Fuller's diagram the period is arbitrarily inserted between 3 and 1. Nevertheless this number play is ingenious and is quite characteristic of ancient cabalistic occultism.

P. C.

ELOHIM AND THE NUMBER π.

In the July number of *The Monist* I was much interested by your article "The Number π in Christian Prophecy," but I somewhat fail to see your justification in approximating π to $3\frac{1}{2}$, or half the

mystic 7. Even in primitive times the ancient astrologers and mathematicians were probably not quite so inaccurate as they are often represented.*

A still more curious coincidence concerning π and Hebraic numerations, is, I believe, to be found in their word Elohim. The following, a short time ago, was pointed out by a friend of mine:

1. ELOHIM = אלהים = 40, 10, 5, 30, 1.
2. (Strike out the zeros) = 4, 1, 5, 3, 1.
3. Draw a magic pentacle and inscribe the figures round it as in the sketch.
4. Place a decimal point between the 3 and the 1.

And behold! 3.1415 or π worked out to the approved four places! No approximate or makeshift $3\frac{1}{7}$. Elohim or God, a perfect cycle, an absolute unity!

CAPT. J. F. C. FULLER.

LONDON, ENGLAND.

THE CAPRICES OF ONE-SEVENTH.

There is a peculiar property pertaining to one of the numbers given in the editorial article on the Franklin squares in the October *Monist* (p. 605); i. e., 142857 (999999/7), which also belongs to many other series of numbers. This property is shown as follows:

(1)	(3)	(2)	(6)	(4)	(5)
1	4	2	8	5	7

The product of this number multiplied by any of the figures enclosed in brackets may be written down, by commencing with the figure below the multiplier and completing the row by writing the figures consecutively to the right as far as they go—then going

*In reply to this comment we have to say that ancient astrologers and mathematicians were frequently very inaccurate. One instance of this is that the value of π is even given as 3 in ancient Babylon, which view was also entertained among the Israelites. We read in Kings vii. 23 and 2 Chron. iv. 2 that the molten sea was 10 cubits in diameter and 30 cubits in circumference. The same idea is repeated in the Talmud where we read, "What is three handbreadths around is one hand-breadth through." Cf. Schubert's article "The Squaring of the Circle," in his *Mathematical Essays and Recreations*, and Beman and Smith, *New Plane and Solid Geometry*, p. 221.

over to the other end and writing them in the same way up to the first figure used.

Thus 1 4 2 8 5 7 × 6 = 857142. Another property of this series is, that putting the last three figures under the first three and adding together produces 999. This is a feature common to all such series—I remember many years ago, making up a similar series of 98 figures, by working out the first 49 figures and then completing the series by means of the above feature.

W. S. ANDREWS.

SCHENECTADY, N. Y.

REPEATING PRODUCTS.

If 142857 be multiplied by successive numbers the figures repeat in the same circular order; that is, they read around the circle in the margin in the same order but beginning at a different figure each time.

$$\begin{aligned}
2 \times 142857 &= 285714 \\
3 \times \text{“} &= 428571 \\
4 \times \text{“} &= 571428 \\
5 \times \text{“} &= 714285 \\
6 \times \text{“} &= 857142 \\
7 \times \text{“} &= 999999 \\
8 \times \text{“} &= 1142856
\end{aligned}$$

(When we attempt to put this seven-place number in our six-place circle, the first and last figures occupy the same place. Add them, and we still have the circular order 142857.)

$$\begin{aligned}
9 \times 142857 &= 1285713 \ (285714) \\
10 \times \text{“} &= 1428570 \ (428571) \\
11 \times \text{“} &= 1571427 \ (571428) \\
23 \times \text{“} &= 3285711 \ (285714) \\
89 \times \text{“} &= 12714273
\end{aligned}$$

(Again placing in the six-place circular order and adding figures that would occupy the same place, or taking the 12 and adding it to the 73, we have 714285.)

$356 \times 142857 = 50857092$ (adding the 50 to the 092, 857142)

The one exception given above ($7 \times 142857 = 999999$) to the circular order furnishes the clew to the identity of this “peculiar” number: 142857 is the repetend of the fraction $^1/_7$ expressed decimally. Similar properties belong to any “perfect repetend” (repetend the number of whose figures is just one less than the denom-

inator of the common fraction to which the circulate is equal). Thus $^1/_{17} = .0588235294117647$; $2 \times 0588\ldots = 1176470588235294$ (same circular order); $7 \times 0588\ldots = 4117647058823529$: while $17 \times 0588\ldots = 9999999999999999$. So also with the repetend of $^1/_{29}$, which is 0344827586206896551724137931.

* * *

This property of repeating the figures, possessed by these numbers, enables one to perform certain operations that seem marvelous till the observer understands the process. For example, one says: "I will write the multiplicand, you may write below it any multiplier you choose of—say—two or three figures, and I will immediately set down the complete product, writing from left to right." He writes for the multiplicand 142857. Suppose the observers then write 493 as the multiplier. He thinks of 493 × the number as $493/7 = 70^3/_7$; so he *writes 70* as the first figures of the product (writing from left to right). Now 3/7 (i. e., $3 \times {}^1/_7$) is thought of as 3 × the repetend, and it is necessary to determine first where to begin in writing the figures in the circular order. This may be determined by thinking that, since 3 × 7 (the units figure of the multiplicand) = 21, the last figure is 1; therefore the first figure is the next after 1 in the circular order, namely 4. (Or one may obtain the 4 by dividing 3 by 7.) So he *writes* in the product (after the 70) *4285*. From the 71 remaining, the 70 first written must be subtracted (compare the explanation of 89 × 142857 given above). This leaves the last two figures *01*, and the product stands 70428501. When the spectators have satisfied themselves by actual multiplication that it is the correct product, let us suppose that they test the "lightning calculator" with 825 as a multiplier. $825/7 = 117^6/_7$. *Write 117*. 6 × 7 = 42. Next figure after 2 in repetend is 8. *Write 857*. From the remaining 142 subtract the 117. *Write 025*.

Note that after the figures obtained by division (117 in the last example) have been written, there remain just six figures to write, and that the number first written is to be subtracted from the six-place number found from the circular order (117 subtracted from 857142 in the last example). After a little practice, products may be written in this way without hesitation.

If the multiplier is a multiple of 7, the process is even simpler. Take 378 for multiplier. $378/7 = 54$. Think of it as $53^1/_7$. *Write* 53. 7 × the repetend gives six nines. Mentally subtracting 53 from 999999, *write*, after the 53, *999946*.

This trick may be varied in many ways, so as not to repeat.

(Few such performances will bear repetition.) E. g., the operator may say, "I will give a multiplicand, you may write the multiplier, divide your product by 13, and I will write the quotient as soon as you have written the multiplier." He then writes as multiplicand 1857141, which is 13×142857 and is written instantly by the rule above. Now, as the 13 cancels, the quotient may be written as the product was written in the foregoing illustrations. Of course another number could have been used instead of 13.

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A LOGICAL ASPECT OF THE THEORIES OF HYPERSPACES.

Mathematical literature already abounds in treatises on hyperspace; Grassmann, Veronese, Jouffret, Schoute and others have carried on and systematized the work begun by Riemann, Cantor, and followers of the Göttingen school. That all these investigations have proved useful and gained a scientific status for the mathematics and geometry of hyperspace cannot be denied; their utility has been admitted by Poincaré and Klein, while their emotional value, as aids to freeing the human spirit from the trammels of humdrum existence, is proclaimed by other distinguished investigators. In view of these facts, how can we criticise the conceptions involved in such a demonstrably useful branch of inquiry?

The reduction of "dimension" to nothing more than "determinant," "coordinate," or the like constitutes the weak point in the theory, at least as it has been developed and applied in certain hands. We shall undertake to show that it is only by doing just this unjustifiable thing that mathematicians reach the conception of hyperspaces; our thesis then may be stated in terms of the rather serious charge that mathematicians have perpetrated the fallacy of conversion. They have reasoned as follows: "Every dimension is indubitably a determinant or coordinate; therefore every determinant is really a dimension, and dimension means *nothing but* determinant." If we can prove this to be the case, we will not thereby have proved the inaccuracy or uselessness of *a theory of n determinants;* but we will have demonstrated the absurdity of applying such a theory in certain ways to space in any other sense than that of a formal method. Suppose we look into the most popular presentation of

this whole matter which has as yet been made, namely Poincaré's chapters in his *La science et l'hypothèse.* Here, I believe, we find an absolute identification of dimension with determinant.

In Chapter IV of this work we are told explicitly that the number of determinants is what decides the dimensionality of space. Visual space—i. e., immediately perceived extension—is compared with geometrical space in such a way as to emphasize this point. If the psychologist who reads these lines will pardon my failure to call attention to the primitive psychology involved in the eminent mathematician's remarks, I shall endeavor to confine myself to the bare logic of the case. We are told that visual space is (1) continuous, (2) two-dimensional, (3) not homogeneous, and (4) limited. Its bidimensionality is necessitated by the structure of the retina, which as a plane can have only two dimensions(!). The third dimension of visual space is produced by the introduction of a new determinant, the muscle sensations involved in accommodation and convergence. "Complete visual space has precisely three dimensions, which means that the elements of our visual sensation . . . ..will be completely defined when three of them are known;.... *they will be functions of three independent variables." (Ibid.)* But this forces now a remarkable perversion of demonstrable facts, for as soon as Poincaré observes that the third determinant, viz., the muscle sensations, is really double, being composed of two classes deriving from two wholly different sets of muscles, he feels, in all consistency, driven to declare that the least perceptible differences of convergence-feeling must be correlated in one-to-one correspondence directly with least perceptible differences of accommodation-feelings, for otherwise *if these were independent determinants we would really perceive a visual space of four dimensions.* In reality, we do note differences in convergence without differences in accommodation and vice versa; monocular vision—distance perception by accommodation alone—proves conclusively that the supposed third determinant is analyzable in real life into two independent determinants. Hence, following Poincaré's own logic, *we really perceive a four-dimensional space in every-day life.*

Nothing proves more simply than just this *reductio ad absurdum* that it is an indefensible procedure to identify spatial dimension with a mere determinant. To be sure, some of the difficulties in the above argument must be attributed to the rather amusing psychology employed in it; yet there is a logical blunder in addition to all this involved in the suppressed but very active conversion of

the proposition that "every dimension is a determinant." What is really implied is: "every determinant of a dimension (in perception) is a dimension of that dimension," so that wherever we find a dimension whose *perception* is a function of n independent variables, there we find a dimension having in itself n dimensions! There is plainly a confusion here between the conditions under which a certain thing is experienceable and the peculiar structure of the experienced thing. The result is that Poincaré is analyzing dimensions into elements themselves dimensions (of different order), so that in strict analogy he is saying with reference to space precisely what might—with equally fatal equivocation, of course,—be said of colors: I might say, for instance, that colors themselves have colors, inasmuch as any given color, say a certain gray, is "determined" by two other colors—e. g., a pair of complementaries of given intensity. Perhaps the analogy would seem stricter if we said that every color has as many dimensions as it has determinants—and this is actually asserted by the modern mathematicians; yet it strikes me as more consistent to say that, if the determinant of a dimension is to be called a dimension, we ought to call the determinant of a color a color. But we shall not quibble over this point.

Consistently with his first conclusions, the eminent mathematician declares later on that motor space has as many dimensions as we have muscles. I do not see why he stops at this thought, for surely the character of sensations from each muscle is itself a variable, so that we would really have many times as many determinants of space, in terms of muscle-sensation, as we have muscles. Aside from this, though, the main point is clear; dimension is *nothing but* determinant. But what does this signify? Put concretely, does it force us to conclude that a one-armed man has a different space than a two-armed one? And that a limbless individual would live in a world of vastly fewer dimensions than a normal man's universe? And that there is such a difference between the normal man's world and the one-eyed man's that the two worlds are genuinely incommensurable *in precisely the same sense in which a solid is incommensurable with reference to a plane?* Empirically we have not the slightest grounds for supposing this to be the case. If it is true, then all possibility of human intercourse on the subject of space is manifestly cut off.

But there is one more step to be taken. If dimensions are nothing but determinants, what are they determinants of? The first answer of the higher mathematician to this query would run

as follows: anything whatever *may* be determined, an assemblage of elements of any given kind whatsoever,....numbers, notions, sentiments, lines, tones[1] and so on. Everything capable of forming an "assemblage" and perhaps some things incapable of doing such, have dimensions. On this score striking unanimity prevails. But suppose we ask now, what constitutes the difference between sentiments and hues, or between tones and triangles? Surely the "dimensions" of things themselves only serve to determine the elements *within their species.* A color, we are told, has three dimensions; so too a musical note. Shall we say that, inasmuch as these have the same dimensions, they are therefore homogeneous?

Before giving our answer to this last difficulty, another confusion must be noted. Poincaré speaks of dimension in his famous Fourth Chapter as "determining causal conditions," while other mathematicians see fit to interpret the term as meaning "inner variable quality" of a color or tone-perception. For Poincaré, color ought to have, then, only two dimensions because the retina has only that number, and no accommodation nor convergence comes in to determine color-quality. From the standpoint of other mathematicians space has as many dimensions as we choose to give it, inasmuch as we can think of it as composed of the most various elements, such as points, point-groups, planes, spheres, parabolas, conic sections, and so on. We have then two views within the mathematical theories themselves, between which we must carefully distinguish and each of which we must analyze.

To return to the previous question: what constitutes the differences between two objects having the same dimensionality? There is no other answer than the venerable psychological one which implies a naughty atomism to many good souls: the determinants are themselves qualities of some sort, not merely numerical forms of control and designation of other qualities. A determinant, as a variant, is itself a varying *quality,* a changing *something* which is not a mere abstract dimension but a very definite empirical content. The dimensions of color are, as mathematicians tell us, quality, brightness, and saturation. Pitch, *timbre,* and loudness are the "dimensions" of tone, and so on. What, now, are the dimensions of space? Are they *merely* determinants, i. e., incorporeal, inexperienceable nonentities which, wholly apart from consciousness, decide the way we shall perceive space? Are they wholly extraneous to perceptions of space, as Poincaré's bidimensional retina is

[1] Keyser, "Mathematical Emancipations," *Monist,* XVI, 68.

"outside" every perception determined by it? Are they, in short, absolutely different in their relations to that of which they are dimensions from every other dimension type, such as color-dimensions, tone-dimensions, and so on? Common sense and, in a half-hearted way, the majority of mathematicians reply negatively to this query. The dimensions of space are space-qualities, just as intensity of tone is a tone-quality and dimension at the same time. Put in psychological language this amounts to the commonplace that extension is an irreducible experience.

The interpretation of Poincaré's may now be summarily dismissed as either absurd or useless. For if we take the "determining *causal* conditions" into account as dimension, just as he has taken the supposedly planar retina, we reach the most astonishing burlesque. The retina is curved, therefore visual space is curved; the retina has really three dimensions—notably a thickness of three strata,—hence space has three dimensions, for the retinal image has thickness; the optic nerve, the optic thamali, and so on also have certain shapes, hence space must somehow have corresponding configurations. But enough of such nonsense. It simmers down to this: perceptual space has indefinitely many dimensions, i. e., causal conditions, although it seems to have but three. Hence what a thing *appears* as and what it *seems* to be are two different things. A truly wonderful refinement, we may all agree.

In justice to mathematical science it must be added that the vast majority of theorists do not hold the above view. That the greatest among them should is perhaps to be construed as a confirmation of the good old doctrine that the gods are jealous of too great human success. The usual defense made by mathematicians at this point is that dimensions depend upon the manner of description; space, for instance, has no absolute dimensions, but may be regarded as having any number, according to the "unit of measurement" or "generator" employed by the human analyst. The question touching the essential nature of these units or forms of description is simply waived with the remark that dimensionality has reference solely to the number of conditions necessary to be known whenever a space, described in terms of some particular unit, is to be adequately definable and to have its parts unambiguously localizable. A plane, for example, has one dimension when described as a pencil of lines, for here the unit of description is the line; it has two dimensions when described in terms of the point. A line may have any dimension we choose for it may be described

as composed of points, point-pairs, point-triplets, and so on.[3] This is virtually what Poincaré contends when he declares that Euclidean and non-Euclidean geometries are all equally valid descriptions of the same space.

But now the results of the fallacy of conversion are most clearly disclosed. The above interpretation means that space itself, whatever it be "absolutely," is indifferently receptive to and capable of an indefinite number of descriptions each of which ascribe to it a different dimensionality. It is a purely pragmatic matter whether we call it tridimensional or six-dimensional then. Where then does hyperspace come in? What is the mystery in a six-dimensional space if this space is really naught save the good old friend we all know and habitually describe in a way pleasing the orthodox trinitarians? Of mystery there is none. It remains for the theorist to invent one by wondering what kind of structure that would be which needs more than three *points* to determine its elements. For our space needs only three point-determinants, a fourth point not being indispensable, though perhaps sometimes convenient. A four-point space is obviously different from the one we know perceptually; can it be conceived without inconsistency?

In order to decide this we must put the problem much more sharply. It amounts to this: given a structure of such a sort that any of its elements may be adequately defined when three of the peculiarities of that element are known, is it possible to conceive another structure of such a sort that any of its elements may be adequately defined when the three peculiarities of the elements of the former structure *plus* one of these same peculiarities *taken a second time* are known? This is precisely what the transcendental geometer is asking when he wonders whether a fourth *point*, i. e., one of the three determinants of known space, can be needed by any space-structure. He is not asking for *any* sort of a fourth determinant; he insists upon having one just like the kind already used, and refuses to be placated with worthless substitutes.

We may imagine that the geometer would protest at this juncture with the remark that to him a point means nothing but a position, and he is really speculating about a structure which needs to be described by reference to four positions. But this does not help him to avoid using the same determinant over again; if he is asked to define position there is nothing for him to do save to

[3] Professor Keyser's article in *The Monist*, already referred to, contains an excellent résumé of this view.

appeal to perception. If perchance he says that by position he means merely a determinant, he surrenders his case, for the gist of the whole matter is wrapped up in the *quality* of the determinant. We have already indicated sufficiently that a determinant is not a mere abstraction but rather has a definite qualitative character. And in his very conjecture, the geometer is inquiring after a point-determinant, viz., one of those qualities which determine known space. It makes no difference how the point may be defined in words; its essential character as a peculiar phase of known space cannot be conjured away without putting an end to the wit of the geometer's wonderings about hyperspace. For there is no mystery in four-dimensional space unless we agree to use one of the determinants twice.

To show up the nature of our criticism, let us take a case which is treated as absolutely parallel. Tones are tridimensional just as space is. Now, according to the same impulse which moves the geometer to search after four-dimensional space, we, as music-lovers in search of some new thrills which may out-Wagner Wagner, wonder what four-dimensional tones could be like. Now who would suppose that this would mean that we were trying to imagine a tone with one pitch, one timbre, one loudness, and then another timbre (or forsooth another loudness)? The very suggestion is ridiculous, yet it is identical with the geometer's suggestion. In the case of tones, the only thing we could mean without sheer contradiction would be that there must be imagined some wholly different and absolutely unsuspected *quality* which is an independent variable. Now this we can easily imagine; for instance, every tone might be perceived as having a certain variable size, so that a complete description of such a tone type would involve the feeling of bigness or area or the like. If we proceeded in like manner in geometry, we would not attain a four-point space, though we might conceive a four-determinant space.

A special essay might be written in criticism of the apparently staggering assertion made by several distinguished geometers that they can actually intuit the fourth dimension of which they speak. If this were really true, then all these present elaborations would without further ado be banished to the limbo of empty ravings. But the fact that those geometers describe the intuition as a series of rapidly succeeding perceptions of the projections of a four-dimensional body upon a tridimensional one suggests what has actually been confessed by the claimants of this new "second sight," namely

that psychologically the case is perfectly parallel to that of perceiving depth in a painting of two dimensions. As we are here chiefly interested in the baldly logical aspect of the reasoning involved, the analysis of this intuitional process may well be deferred with the remark that it is one thing to interpret a series of perceptions as *symbolic* of something unperceived and a very different thing to intuit that symbolized thing. The most dangerous fallacy of all mathematical reasoning, the source of so much of the curious mysticism of mathematicians, lurks in this confusion of perceiving symbols with perceiving symbolized things. We shall return in a moment to a discussion of this fallacy.

The mathematician still holds a deadly weapon of defense. How, he asks, can it be possible to manipulate with the concepts involved in my hypotheses and to reach logically unimpeachable conclusions capable at least of perfectly lucid representation unless the concepts themselves are sound? To this I need give no exhaustive reply, inasmuch as the logical world has long since settled the significance and the insignificance of this contention. Freedom from contradiction may be obtained at little cost so long as it means merely logical consistency between explicit assumptions and explicit conclusions from those assumptions. But of what value to anybody is such consistency unless some sort of control is exercised over the assumptions? In elementary logic we discover that there is no contradiction in saying:

Major: All abracadabras are polyhedrons,
Minor: A is an abracadabra,
$\therefore$ " " a polyhedron.

For this means merely that *if* the premises are assumed the conclusion is thereby guaranteed. To the mathematician "possibility" means nothing save "freedom from contradiction," according to Poincaré, so that there is absolutely no distinction between a mathematical truth and a logical hypothetical proposition, save perhaps that the mathematical truth is made by filling out the blanks for S and P in the syllogistic formula with concepts of quantity, number, and the like. We must then put in precisely the same class of truths the following two propositions:

MEDIEVAL.	MODERN.
1. Angels are spirits, incorporeal beings.	1. Points have no magnitude.
2. A needle-point has material size.	2. A line has magnitude.
3. Infinite angels might waltz upon this needle-point.	3. There are infinite points in a line.

There is surely the same freedom from contradiction and the same deep blunder in each case. But is the majestic rigor and exactness of mathematics reducible to nothing more than purely formal consistency? Does mathematical possibility mean nothing save what Poincaré says it does? If so, we have discovered perhaps the most powerful argument in favor of extreme humanism that has yet been adduced; for there are infinite possible mathematical systems, systems which are not merely *descriptive* variations of tridimensional space but really based upon other spaces, and from these we choose one merely because it is more practical than the others, and we call it real or true. Nay more, we not only choose one mathematical system, but one space-type and swear by that.

As the whole affair is purely conventional then, and as any system of description can be made adequate in spite of its cumbrousness, it must of course be possible to describe without contradiction all the phenomena of ordinary space in terms of a two-point space. It might be inconvenient, but for all that it must be possible. A one-point geometry must likewise be possible, and perhaps a pointless one might even be developed! Might the skeptic suggest then that the geometer of the day, before soaring off into hyperspaces, descend to the humbler realms of subspace; perhaps, if the general principle of economy in scientific constructions applies here, he might make geometry infinitely easier for schoolboys by eliminating the third and second dimensions. We warn him in advance, however, that *if he smuggles these dimensions into his units of description,* his improved geometry will be rejected as not complying with the specifications. To call a plane one-dimensional when its elements are bidimensional may have a limited practical value. But it has no bearing on the problem of hyperspaces. *Where* the determinants are used is immaterial.

I think that neither naive man nor logician will agree that mathematical possibility is *mere* consistency in manipulating concepts of number and magnitude; for such an interpretation throws open the gates to every form of long-dead scholasticism and invites into the ranks of truth-seekers all those skilled in juggling terms and turning tricks. However possibility is to be defined so as to satisfy scientific logicians and those who apply mathematical formulas, it surely must be connected somehow with the relation between such magnitudes as are experienceable and the number-forms which serve to describe those magnitudes. Otherwise it has absolutely

no meaning. The present paper, being strictly critical, foregoes the attempt to give a corrected definition of the term.

We are now ready to touch upon the basic fallacy of the whole matter, the fallacy of reading into the thing symbolized all the marks of its symbol, the fallacy of complete inverted analogy. In Professor Keyser's article, above cited, we are told how the geometer came to wonder about hyperspaces. He observes that a one-to-one correspondence obtains between a line and the number-series, between a surface and number-pair series, and between a solid and number-triplet series. There "ought to be," then, for pure thought at least, space correspondents for all series of independent (number) variables. A four-dimensional space is then conceivable and demanded for consistency's sake; likewise for n-dimensional spaces. Now, if this is the actual origin of the whole transcendental geometry, and if any theory can be criticized by attacking its origins, a very strong case can be made out against the mathematician. For what has he actually done here? He claims that because (1) the space A symbolizes in a certain respect the number-series, i. e., an element of A symbolizes n, and (2) the space B symbolizes in like respect the number-pair series, i. e., an element of B symbolizes mn, and (3) the space C symbolizes in like respect the number-triplet series, i. e., an element of C symbolizes mnr; therefore, since four numbers may, *as numbers*, be grouped, there must be a (conceivable) space D which symbolizes *in like respect* the number-quatrain series, i. e., an element of D symbolizes $mnrs$. Put more abstractly, this means that, if X symbolizes the species Y, then there must be species (somehow embodying all the marks of Y) which are adequately symbolized by all variations of X.

Before going on with this matter, one might well ask by what right space is regarded as being a symbol of number. The usual notion, if I am not mistaken, is more nearly that number is a symbol of space. Indeed, the very essence of number is symbolic, while space is surely something quite different and more than merely representative or descriptive of something else. It would then appear that the mathematician must justify his inversion of the symbolic relation, for his procedure remains unique and highly suspicious until fully explained. Notice what it is equivalent to in other sciences. We have suggested the parallel in the case of acoustics and optics; if tridimensional space symbolizes the color-continuum, then the discovery of an actual fourth determinant of color would prove the reality of a four-dimensional space. Indeed,

on the general principle employed. the discovery of *any* real structure or system with four determinants would prove the same thing.

Whatever is true of either the symbol or the thing symbolized is *at least conceptually* true of the other: this is the gist of the whole matter. And what has led mathematicians into this serious blunder is the abstract nature of their reasoning. They study "pure quantity," which means not only that they neglect every special peculiarity of the objects amenable to their researches, but also that they refuse to regard quantity itself as a quality of a special sort. In brief, they ask nothing whatever about the quality of the determinants in correspondent structures. It must be granted, now, that we cannot say whether more or less determinants *of a given species* are possible; to say their mere number is conceivable is not giving us any assistance in conceiving their qualitative combination. For number can not describe a quality; it can merely indicate the degree of complexity of a structure, but not the specific character of that complexity. In strict logic this complexity is a quality of course; but the usage of language, for very good reasons, gives it the special name of "quantity." One of the root evils in the whole matter is the general failure to realize the logical relation between quality and quantity.

It is only because space-determinants have been confused with mere number that the idea of hyper-spaces has arisen. Lack of clearness about the relation borne by number to quantity,—the root and branch of all problems in the logic and philosophy of mathematics,—is the special cause of the logical errors committed. It would require a second—and much larger and more difficult—paper to discuss that relation; we can merely note the result of its misinterpretation here. Identification of dimension with determinant is possible only on the assumption that qualities of determinants may be absolutely ignored because the number of determinants, real and possible *and imaginable,* may be varied without affecting the possibility (even conceptual possibility) of the resulting structure. Number then reflects the whole character of innumerable things, with reference to their variability. What, then, is true of number is true of whatever number stands for. Whatever is conceivable of number is conceivable of what number represents. This underlies the whole system of transcendental mathematics and implies a metaphysic of number which is not distinguishable in the main from Pythagoreanism save by the fact that it outdoes this latter.

The reader will not suppose that the above criticisms bear

against the mathematical theory of determinants; the whole protest is directed solely against the special application of that theory to space. The logician must feel that there are just as many wonderful hyper-smells, hyper-hues, and hyper-tones as there are hyper-spaces, —to wit, none, so far as mathematical analysis can show him. There is, however, a most wonderful and most useful theory of determinants which can be applied to anything and everything distinguishable.

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THE WORLD-TREE OF THE TEUTONS.*

One of the least satisfactory portions of Professor De la Saussaye's valuable book on *The Religion of the Teutons* is that relating to the Askr Yggdrasil, or Tree of the World. His treatment of this myth is very brief and, at the end, he merely concurs in Müllenhoff's declaration that a perusal of the pertinent passages in our sources "can leave in the mind only the most incongruous ideas concerning the character of the world-tree."

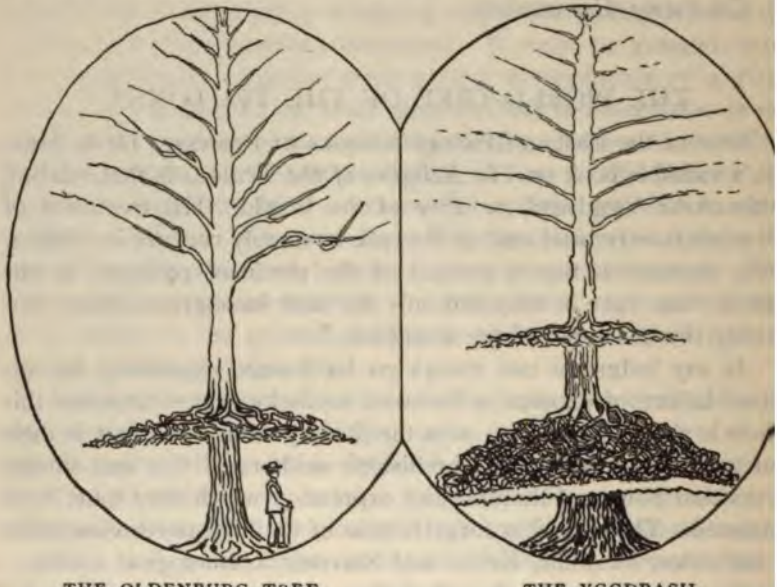
In my judgment two things go far toward explaining the admitted failure of experts in Teutonic mythology to reconstruct this tree in a way to harmonize with the literary data. The first is their reluctance to ascribe to the prehistoric authors of this and similar myths that power of thought and expression which they must have possessed. The second is forgetfulness of the high-north view-point of the oldest Teutonic, Keltic, and Slavonic, cosmological myths.

Once grant to the far-off authors of the Aryan mythologies a mental power adequate to conceive of their worlds celestial, terrestrial, and infernal, as all united in one organic unity, like the unity of a living tree, and we are entitled to look for something like rational fitness in their chosen symbol however poetic or artistic it may be. So, too, the moment we take, as we ought to do, a high-north view-point in visualizing the heavens and earth, we immediately find the world's axis substantially upright in position, and therefore easily seeming a column for the support of the dome of stars which revolves, as on a pivot at its head. This column, extending from visible zenith to lowest nadir of the universe furnishes

*For the information of our readers and for the proper identification of the author we wish to state that the writer of this paper was president of Boston University from 1873 to 1903 and as a scholar is mainly known in Oriental fields.

the one bond needed to give unity to all regions celestial, terrestri and infernal. It is the sacred Irminsul, *quod latine dicitur univ salis columna, quasi sustinens omnia.*[1] It is the trunk of all wor trees. Generations ago this was clearly seen, and W. Menzel w said: "Dieses Symbol entsteht ursprünglich aus der Vorstellung d Weltachse."

The only important difficulty in picturing Yggdrasil in harmo with the mythological data is found in the account given of t "roots." The Edda itself interprets the branches, saying that th



THE OLDENBURG TREE
Showing a section of its aerial root-system.

THE YGGDRASIL
Triradically depicted.

"spread over the whole world and even reach above the sky." the "three roots," however, at least one seems to be represented situated in a region naturally assigned to the branches. Amo early interpreters, Ling evades the difficulty by suggesting that t Yggdrasil is merely a symbol of life, universal and human, and th the three roots symbolize the physical, the intellectual and the mo principles respectively. Another attempted explanation has tak the three to mean "matter, organization, and spirit." In Finn Ma nusen's striking pictorial representation in his *Eddalæren*, Plate the first or lowest root is a root-system, the second a branch-syste

[1] Grimm, *Deutsche Mythologie*, p. 759.

and the third one knows not what. The picture is reproduced as frontispiece in Mallet's *Northern Antiquities*.

In a study of the cosmical tree in twelve mythologies, published in the year 1885,[2] I referred briefly to the Yggdrasil, and made "its midbranches inclose or overarch the abode of men." Not long after, however, on maturer consideration I reached a somewhat modified view, and one which still seems to me the true solution of the problem of the roots. As introductory to its presentation I would here first call attention to a noted *lusus naturæ* found in the chief cemetery of the city of Oldenburg. It is a tall and symmetrical tree with two systems of roots, one in the ground, and the other in the air. The upper one constitutes a kind of roof, about ten feet from the ground, and under it people walk about freely. A rude sketch of the tree is here presented. At the time of my visit to it I read the folklore tale which accounts for the prodigy by stating that once upon a time, when a falsely accused maiden was on her way to the place of her execution, she plucked up a small shrub and, giving it to the unmerciful mob of her persecutors, bade them plant it top downwards in the earth, assuring them that God would confirm her protestations of innocence by making it to grow with its roots in the air. According to what is now folk-faith her prophecy was fulfilled, and what was at first the taproot of the plant has become the trunk and beautiful top of a tall and shapely tree. A huge ring of roots is certainly there, high in the air, with only here and there a feeble leafstem struggling for life. As a permanent inscription on the main portal to the cemetery one reads to this day the words which the maiden's wicked, but afterward convicted and remorse-smitten accuser to his dying day repeated over and over: *"Die Ewigkeit ist lang! die Ewigkeit ist lang!"*

Now rings of roots, similar to the two systems on the Oldenburg tree, are not so rare as may be supposed. They are very often found at the base of a stalk of Indian corn (maize). On a hemlock in the woods I once found a kind of aerial guy-root. It started out from the tree as a branch, more than a foot above the ground. It then rooted itself close by in a high bank of earth, but after passing through this, it again became a branch, and flourished as a low bough of the mother tree. Any tree whose branches radiate at certain nodes like the spokes of a wheel, one set of them above another, would easily suggest to the imagination of a primitive people a continuation of the same system below the surface of the ground.

[2] *Paradise Found.* Boston, U. S. A., 11th ed., 1904, pp. 262-278.

In the light of the foregoing it is plain that a new and simple solution of the problem of the rooting of the Teutonic World-Tree can be had by making the three "roots" signify *root-systems,* the first and lowest being in the depths of hell, the second constituting the floor of the region in which men have their abode, and the third being situated just at the top of Cloudland, though still far below the starry abode of the immortal gods. This arrangement perfectly answers to the troublesome statement in the Grimnismal: "Hel dwells under one root, the frost-giants under the second, and the race of men under the third." See picture accompanying this paper.

Combining this new interpretation with that which I gave of Bifröst in pp. 155-158 of the work before referred to, and which identifies the bridges of Chinvat, Sirat, Bifröst, etc., with the axis-pillar of the universe, all further objects mythologically associated with Yggdrasil, such as the doomstead of the gods, the two swans, the eagle, the squirrel Ratatösk, the headspring of all the world's waters, the four harts, Nidhögg and the infernal serpents,—all take their appropriate places in the cosmos, and are found to have corresponding symbols in one or more of the world-trees of other mythologies. To the attention of interested scholars I confidentially commend it, stipulating only that they first read the recent acount of the world-tree myths given in pp. 992-1018 of John O'Neill's *Night of the Gods,*—a work of immense erudition and of pathbreaking significance.

WILLIAM FAIRFIELD WARREN.

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SOME CURIOUS PSYCHOSENSORY RELATIONSHIPS.

Nearly every one associates with descriptive terms a more or less vivid imagery of the thing or quality denoted. Other people, however, there are who go beyond and possess sensory association values of a peculiar sort—the reference of color (psychic color) to things, words or qualifications outside the color series, or at least independent of any essential objective relationship to it.

And there may be auditory side issues. Some claim to perceive color values according to particular letter sounds, or symbols. Some claim to see color associations in the written characters, which of themselves may be indifferent. I think very few individuals associate sound, or definite musical tones, as predominant to a visual imagery.

This may be because of our visual education being in excess of auditory studies; and the real neglect of the sense of hearing renders us less liable to establish any unusual values in relation to that slighted faculty. But that cross relations do exist is important; it shows to an extent the path of specialization of function, and may indicate future lines of cleavage.

Few will dispute the need of biologic training for the psychologist.

A noted English physician and writer remarks that while once it was customary for all ambitious men to work toward their goal by way of the law, now medicine is offering the training which can best fit the mind to cope with life's problems—in view of modern science, which is largely biologic. Psychology must admit the essential and peripheral basis of consciousness, so that even selfconsciousness may be more widely seated than in the animal brain—although as a coordinating center that organ claims our notice. So it is as a physician, in the broadest sense of the term, I venture to discuss an intricate psychologic problem.

Exaggerations or parallelizations of sensory impulses are found more commonly in neurasthenics—those of unstable nervous organization.

With this class of patients must not be confused those individuals of normal strength of structure, but with a plus nervous inherent energy. These also may show curious sense relationships. One class is progenerate; the other, degenerate. Visual acuity, in one, may be below normal—combined with retinal hyperesthesia; or again, with wrong refraction a retinal depression may exist; many physical factors should be considered in casting up our accounts. I recall a case of colorblindness of 50 per cent., reds and greens 80 per cent. and over, in which afterward the sight was found to be different in the two eyes, the right nearsighted or myopic, and the left farsighted or presbyopic—and astigmatism at asymmetric axes!

The boy had never been taught to name colors, and had never seen the world as it is, anyway. On the other hand, with proper refraction, although after twenty years of eyestrain, his vision is over 36/20. I propose to give some of his color associations, before which I would state that in cases in which anisometropia and astigmatism offer difficulties, and in which no histologic or somatic vice exists to suffer thereby, or in which none may be induced, psycho-

centric visual acuity may be increased as a result of the continu efforts rightly to define objects.

He states that

a is fluffy yellow;
b is soft, dull red;
c is hard, dull white;
d is soft, reddish brown;
e is dark pink, or red;
f is green;
g is red or green;
h is green;
i is purple;
j is reddish purple;
k is grey;
l is blue, clear and deep;
m is red or green;
n is shining red;
o is white or pink;
p is dull red;
q is pink or grey;
r is purple;
s is pale, naples yellow;
t is dark brown, or black;
u is pale, sky blue;
v is green, or yellow;
w is dull black;
x is yellow or green;
y is green;
z is rough, dull black.

On hearing the sounds of the letters he gives another set color relations, not exactly in accord with the sight of the characte as above. His auditory sense is acute, the result of considerat training in music. A very curious relationship between sound a color will be found to exist, as shown below, which I have dete mined as the result of purely auditory stimulus.

Arranged to show the spectrum it is as follows; the compou sounds and diphthongs being analyzed to show their essential el ments and with the exact pronunciation indicated in parenthese

ee (i, Italian)=red;
ay (e, Italian)=light red;
e (ĕ, as in *red*)=orange;
ai (I, English)=confused yellow-orange;
ah (a, as in *father*)=broad yellow;
au (ow, English)=pale blue and green;
aw (as in *saw*)=green (pale yellowish);
oh (long ō)=pale blue;
oo (as in *root*)=blue;
yew (u, English)=violet.

It should be noted that from *ee* to *oo* the vocal apparatus pass through extremes. and that at *ah* the vowel is easiest to produce.

I can offer no explanation for this singular crossrelationshi In my opinion the vowels are more emotional than the consonant In a word's passage through the alchemy of languages the vowe change more broadly than the consonants. That nations in co

climates are freer in their use of consonants than vowels, I believe is due to a very physical reason, viz., the desire to keep the mouth closed. In warm latitudes there will exist no such necessity, and the vowels are more liable to crop out. Emotion, also, is freer established in the warmer countries, and for many reasons, some of which may be physical. With great emotion there is often a tendency to perspire. In cold countries this would be less desirable because more dangerous. The effects of cold and heat on temperament are undeniable. Granting the relation between consonantal and vowel frequency in the emotions, the striking elision of vowels in Russian and Polish particles might be considered—there occur entire words consisting of undiluted consonants. While in Italy liquids and vowels predominate.

The liquids ought to be considered *vowel* in effort, if *consonantal* in mechanism; those who have studied the mechanism of speech will appreciate what I mean.

The solution of the points at issue would seem to lie in just such mechanical or physiologic variations at the root of tone production. How these enter the chain of associations requires an infinite patience to understand. A certain percentage of cases of color and form association, such as letter signs and the scale of color, I have explained in a peculiar way. I found that the alphabet had been taught from colored squares with the letters printed thereon. A sister of mine retains a vivid color association of this sort which I have proven by a fortunate discovery of the card of letters from which she was taught. In other cases some pronounced effect of the term for a specific color and a predominance of certain letters in that term associates with those letters the given color. In the word *blue*, e. g., with one individual it may be the *l*, with another the *b*, with a third the *u*, that the association is formed.

The relation may be established by hearing the letter, or on its being visualized. In the latter instance the predominance of a letter—a plane figure—will depend on many physiological causes. If any astigmatism or a refraction error exists, in the line of defective axes of vision certain angles will be less pronounced than others. A reference to a test card will show the axis of astigmatism in any case. It will then be provable in what characters the distinctness of visualization will exceed others. So, in a word, certain letters will be more easily visible. Astigmatism is common to most of us, and is a factor not to be avoided.

In analyzing association depending on auditory stimulus the

difficulties are increased by the common lack of understanding of tone relations, absolute pitch, timbre, and overtones in general. That modern harmony depends on a development of the dominant chord is also not generally known. In speech many tones are called upon, and many people actually intone, so that the relations of modern harmony are introduced. If in most of us is born a feeling for certain harmonies and for certain discords it cannot be overlooked that so fundamental a relation enters auditory association change.

We must recognize the method of producing speech. The vowels are made in a series from ee to oo, ee being the vertical narrow sound, and oo the horizontal narrow sound, while ah is the complete round tone. The effect of muscular effort is also to be considered. There is a firmly rooted muscle sense, of *rest, weariness,* and *exertion.* Different muscular efforts occurring in the head and face have become associated with definite emotions—the labial, nasal, and ocular external coverings are the muscles of expression. Certainly the vocal muscles are the same—of an expression not visible, but audible.

I think we may proceed in the belief that similar muscular efforts in different individuals give rise to similar impressions; so that if my vocal muscles are muscles of expression and when in use affect me in one way, in the same way another will be affected if he imitate me. But if he is stimulated by the action of my muscles, that is another sort of sensation. Out of any muscular effort in one individual, that is perceptible to another, there come two sets of impressions—an imitative effect, and a percept.

Undoubtedly when one hears or sees a letter sign the effort of producing that sign is coordinated with the percept of it. So that actual muscular effort or a psychic shadow or memory of it, comes into the consciousness in some way associated with the appearance of the character. So that visual and auditory percepts may be combined with a definite motor impulse. The element of protoplasmic contractility, then, is needed to complete any protoplasmic irritable effect. This will be connected with nutritive changes—the element of metabolism. What then of the fourth protoplasmic faculty, reproduction?

This, in an individual organism with reference to itself, is association. If a somatic division were effected, a new individual would be created out of the old. But if the current turn upon itself, as in tissue formation, or in idea association, the reproductive faculty is one of internal economies. The entity or idea within the indi-

vidual is formed in antithesis to the whole. Every idea in consciousness is parallel to changes of somatic activity, in that it is a separation and segregation of forces.

To become self-conscious I insist this separation must be reduplicate, or bilateral, and the brain as a coordinating center for selfconsciousness must, for this reason, be bilateral to offer a sufficient mechanism for self-consciousness. Out of this arises the power of emotion, which I believe has its physical basis in the harmony of two ideal entities, and the effort to harmonize them.

So, when I find astigmatism, I find the emotional person. When I find any marked difficulties in one side of a bilateral sensory tract, the emotional element will be present in that person to the extent of his nervous capability. Emotion may be of a high, sensuous artistic type, or of a low, degenerate, or sensual type; this depends on the fineness of vital fiber. But I want to emphasize the determinism of the fact—not inevitable, but coercive.

Beside astigmatism or auditory defects, nerve conductivity of a variable power may be an essential factor. Neurasthenia, or nerve instability, is founded in its emotional aspect on the difficulty of appreciating stimulus, because of its shifty presentation. The equation of sanity, there, rests on the strength of nerve cells to conciliate the inexactitudes of sense. In these weaknesses and in our efforts to overcome them lie many factors going to overemphasize certain sense appreciations; we value highest what we work most for. If a letter, a sound, a color, or a harmony is more difficult to determine at any moment, in the return of elements present to those circumstances, our memory will re-establish the difficulties we overcame either as such or as the emotions of such.

Colorblindness or faulty naming of color, overcome, in principle or by adjustment, will induce such conditions. Difficulties in forming certain letters or certain combinations of sound will cause them to acquire peculiar emotional values. People who lisp, instinctively come to try to avoid the difficult letter and will often go out of their way to choose the other word. This becomes as much a matter of a way of thinking as of speech. Every throat finds some letters easier of utterance than others. And different languages to different individuals for this reason vary in acceptability. The sense of effect in a language is strongest if the motor lessons were learned with the youthful laying down of emotional faculties.

Some individuals are fortunate in having a relatively normal and symmetric foundation of tissue and a stable nervous organism.

For these, extraordinary sensory relationships are rare—because the physical basis is wanting. In those individuals of either physical defect or asymmetry, or of neurotic constitution, either progenerate or degenerate relations soon crop out. Yet in all of us emotion is a matter of cross-relation in the senses. The effort to establish unity often overpasses original bounds and inundates the entire field of sensory selfconsciousness. The connection between the mechanism of selfconsciousness and the mechanism of consciousness—the latter the universe, and particularly the somatic or body vehicle; and the former the ideal correlation—indicates that our method of analyzing cross-relations must be one of resort to physiologic facts.

I shall take up some elementary sounds and signs showing how they may have a definite emotional basis.

It is true that even in those which refer color to sound, and *vice versa*, there is not an exact or invariable agreement of reference.

Some call the note *A pink*, some *yellow*, etc. But this is no more strange than the different nomenclature of languages in general. On the other hand, certain root words extend through many languages; and *crying, laughing, singing*, all the world over are the same in meaning. *Muscular effort, strain, rest, pain, pleasure* and *satiety* are known to us all and evident in the same expression. From this point it is safe to proceed.

A. VOWELS AND EMOTION.

When one is at ease the muscles relax; when under strain of effort or intention, they contract. In saying *ah*, the easiest position of the throat is assumed; *ee* and *oo* are opposite extremities of greatest restriction and tension. ah-hah-hah is the easy good-natured laugh. ee-hee-hee is the silly, spiteful, or inattentive laugh. oo-hoo-hoo is the laugh of derision, dislike or pretension. It is not strange, then, to find *oo* the vowel of hoot, galoot, toot, etc. And *ah*, the vowel in pater, mater, frater, etc., the home words. And *ee*, the vowel of cheat, dead-beat, etc. These words recommend themselves for what they express. It is true, secondary reasons may place a vowel where its effect is contrary to the general rule. Perfection is not yet. Things will always be seen in the making, and processes are makeshifts.

Moreover, the vowel sounds have a curious power of becoming subjective or objective in significance. The sound of *ee*, for instance, may have a favorable significance, or an unfavorable one. It may mean *slight, small, insignificant, exact;* or it may mean *small, mean,*

unpleasant, exacting. The sound *ee* is that of diminutives as in *wee.* The Italian *ino* and *ina* are examples of this; but the *ee* sound in this use is common to most languages. It seems to particularize.

The sound *oh* is of *increment, enlargement,* or *extension.* Viz., teeny, leetle (little), miserable (meeser-), etc., and *flowing, going, showing, blowing, growing, oh-hoh-hoh!*

All of this, I believe, is largely a result of muscular reflex effect. Before going on with a further analysis I want to append a table of the significance of the vowels as shown in laughing.

SIMPLE VOWEL SOUNDS.

ee-hee-hee: self-conscious, approaching;
ih-hih-hih: unregarding, overlooking;
ĕh-hĕh-hĕh: careless, diminishing;
ăh-hăh-hăh: ease, juncture;
ah-hah-hah: completeness, lack of strain;
aw-haw-haw: reflexive;
ŭh-hŭh-hŭh: minimizing;
ōo-hōo-hōo: distancing, outstanding.

The compound vowel sounds introduce a more thoughtful element, and are usually more distinctive in expression.

COMPOUND VOWEL SOUNDS.

ah-ee (I) hi-hi: calling attention at a distance;
eh-ee (ey) hey-hey: calling attention to that near;
ah-oo (ow) how-how: disturbance, disruption;
aw-oo (oh) hoh-hoh: surpassing, denying;
aw-ee (oy) hoy-hoy: bringing near, coordinating.

In the analysis, it must be remembered that the impressions of vowel sounds will be modified by the nature of the meaning of the word—if the meaning of the word, and the consonantal effect of it corresponds with the vowel emotion the reinforcement of impression is notable.

Cf. the effect of *oh* in *most, noble, notable, notorious, no,* etc., with *mist, nibble, "nit"* (not), in the letter of which a decided contraction or reduction is apparent. Take the following of Robert Louis Stevenson's:

"So long as we love, we serve. So long as we are loved by others I would almost say we are indispensable; and no man is useless while he has a friend."

In this the *oh* influence of *so, almost* and *no* is striking. To replace these effective sounds with an *ih* value would remarkably reduce the breadth of expression. I think we should take the above as illustrative of the fact that the highest interest will settle around sympathetic vowels. If these vowels are contained in less important words there will not be the same acuity of expression as in cases in which it does. I think it may be said that all magnanimous words enjoy the center of the vowel scale (*vide supra*), and that their effect is reinforced by such a station.

While the *oo* extremity tends to subjective direction and the *ee* to objective analysis, the effect of the latter is to emphasize the relation of the speaker to the second or third person; and of the former, the relation of the second or third person to the speaker.

In that muscular sense is real and peripheral, and because of its connection in this matter, the horizontal and vertical mechanisms of the *ee* and the *oo* sounds must be recalled. The sense of gravity in station and the horizontal placing of the two paired sense-organs of sight and hearing, combined to emphasize these differences. The common use of terms of geometric relation to character, such as "breadth," "narrowness," "height of mind," "depth of villainy," etc., show that these are rooted in our psychomechanism. It is clear that the governing influences are both from within and from without, but all experience is arrived at from without and modified by the nature of the organism.

The consonants afford an interesting study. Labials are used for terms of *accretion, acceptance* or *nearness*. Pater, frater, mater.

The dentals are specifying or distinctive sounds—pointing out, or marking off. Gutturals are not so definite. The dentals are of higher specific gravity than gutturals, which may be described as less highly organized, consequently vaguer, at the same time more emotional, or passionate.

I adjoin a list of impressions of the numerical series, obtained from some dozen people:

ON SIGHT.

	WEIGHT	SIZE	SHADE	DENSITY
1	lightest 50%	smallest 60%	reddest 10%	—
2	—	—	greyest 20%	—
3	—	—	whitest 10%	roughest 40%
4	heaviest 20%	largest 10%	reddest 70%	hardest 70%
5	lightest 20%	smallest 30%	whitest 40%	hardest 20%
6	—	—	greenest 20%	softest 70%
7	lightest 30%	—	greenest 80%	—

8	heaviest 60%	largest 70%	yellowest 80%	smoothest 30%
9	heaviest 20%	largest 10%	darkest 80%	—
0	—	smallest 10%	whitest 60%	smoothest 40%

ON HEARING.

	WEIGHT	SIZE	SHADE	DENSITY
1	—	smallest 10%	—	smoothest 50%
2	lightest 40%	smallest 30%	darkest 30%	smoothest 20%
3	—	—	—	—
4	heaviest 10%	largest 40%	—	—
5	—	—	—	roughest 40%
6	—	—	—	—
7	—	—	—	—
8	heaviest 40%	—	—	—
9	—	—	darkest 30%	—
0	heaviest 30%	—	—	roughest 40%

Owing to uncertainty in some tests these results are incomplete. But that the cross-relations do exist is certain.

Something of the mechanism of self-consciousness must be understood before we can trace out such hidden currents as these psychosensory suggestions.

I believe that every idea has its basis in a combination of physiologic units on or in which the idea is, but it is not the combination of units. The organism develops from protoplasm, whose faculties are four, and the organism whose histologic units are four would seem to have also four psychic facultative manifestations. Irritability, contractibility, metabolism and reproduction are the *addition, subtraction* and *division* of the cell. Epilthelium, muscle, connective tissue, and nervous tissue are the corresponding higher powers to which they become raised in physiologic evolution. In the mind they become *sense, will, understanding* and *ideation.* The analogy between ideation and tissue formation, by means of internal reproduction and self-inclusion, is to be held up before us. Every sensation is grasped and the several sensations which are coordinated to become ideal grow out of what constitutes the psychosensory mechanism.

In neurasthenics or those of unstable nervous organization, peripheral balance, or central control wavers. Differing strengths of nerve conductivity, and different powers of conductivity in a nerve or parts of a nerve, are factors which may combine to blur the keenness or exactitude of idea correlation. Certain elements of psychic friction, in consequence, are to be accounted for. De-

fects or abnormalities of physical structure other than of nerve tissue may be important to know.

Some of us experience greater ease in pronouncing certain sounds than others. Certain dialects come to be on account of racial preferences for certain sounds or syllables. The sibilants and the dentals interchange. Gutturals fade out altogether, or may be accentuated; e. g., *thalassa* or *thalatta,* in the Greek for "sea"—*durch* and *through—lake* and *loch,* etc.

When, therefore, an individual deviates from conventional usage, he is judged by others according to their accepted expression. The lisping man is called effeminate, or weak, because his enunciation is not fully formed. So lisping sounds become symbolic of the weaker or less mature emotions. Take for instance the word racial, which is not usually pronounced with the *s* sibilant, but with the *sh* sound.

The accentuation of consonants may indicate the uncouth, the rough, the barbaric, because we associate any overmuscularity with such sorts of people.

Audition colorée is an example of excessive associative power, and is the result of insufficient balance of association whereby the less near is approached because of the loss of what commonly should have been interassociated. Like all such manifestations, I find it varying to suit climatologic changes and body states of being. The epileptic hair-trigger of emotion is easily lost control of.

Whatever the power that governs karyorexis in the cell it is this which in the cerebral organism controls ideation. So that pathology and teratology are paralleled in the formation of ideas by psychic and sensational masses instead of tumors—sarcomas, carcinomas, or warts, and eruptions.

One will never be able to point out such and such a brain-cell as representative of such and such an idea, but I believe the future will chart out the mechanism of self-consciousness in terms parallel to benzol rings, and other organochemic formulas.

So that the psychologist or physiologist alone will not be able to work this out—the future means an interdependence of their efforts—and their success.

PHILADELPHIA, PA. T. H. EVANS, M. D.

[The author wishes to thank Dr. Wm. Wadsworth, in whose laboratory at the University of Pennsylvania in 1896-7 the beginning of the above study was accomplished. T. H. E.]

BOOK REVIEWS AND NOTES.

BUSINESS DOCUMENTS OF MURASHÛ SONS OF NIPPUR, Dated in the Reign of Darius II (424-404 B. C.) By *Rev. Albert T. Clay, Ph. D.* The Babylonian Expedition of the University of Pennsylvania. Series A: Cuneiform Texts. Edited by *H. V. Hilprecht.* Vol. X.

Prof. A. T. Clay, known ever since the year 1898 when he and Professor Hilprecht published Vol. IX of the Cuneiform Texts of the Babylonian Expedition of the University of Pennsylvania, presents us after six years of the hardest and most painstaking labor another volume of the *Business Documents of Murashû Sons.*

The book before us has the following contents:

1. An Editorial preface written by Professor Hilprecht, containing among other things also a discussion of the pronunciation of (a) *AN(mesh)*, (b) of (ilu) *Ud(mesh)*, (c) of *-A-A* at the end of certain nomina propria and (d) of (ilu) *NIN-IB.*

The following parts were written by Professor Clay, viz.:

2. A preface;
3. An introduction;
4. A translation of selected texts. The tablets transcribed, translated and more or less annotated are Nos. 54, 1, 131, 106, 99, 29, 55, 44, 9, 126, 62, 94, 59.
5. A Concordance of Proper Names with copious notes by Hilprecht;
6. Names of Places;
7. Names of Gates in Nippur;
8. Names of Canals;
9. Names of Deities contained in the Proper Names;
10. Names of the Aramaic Endorsements;
11. Aramaic Characters from the Endorsements;
12. Table of Contents and Description of Objects;
13. A List of Signs and their Values;
14. 132 Numbers of Cuneiform Texts;
15. 48 Photographic (half-tone) reproductions of tablets, seals, Aramaic endorsements, modern Babylonian water wheels, and animals used in works of irrigation;
16. Corrections and Additions to Vols. IX and X.

Complete as this index might seem, yet, we miss a list of all the "offices" indicated by the determination *amêlu,* also a list of the different parts and subdivisions of *Gur, biltu* and *ma-na.* These lists, no doubt, would have

been very helpful not only for the students of Assyriology, but also for those of sociology and political history. Also a table of the "fractional numbers" expressed either by "one sign" or with the help of *qât-2-mesh* would not have been out of place. Let us hope that in the next publication this small yet perceptible defect may be remedied.

It is, of course, not to be expected that in a note like this all the interesting and important discoveries with which this publication abounds, can be discussed as they ought to be. However, a few remarks may be permitted here with regard to the pronunciation of *NIN.IB, KUR.GAL,* and *AN (mesh)*.

A. The pronunciation of the name of *(ilu) NIN.IB* was up to the publication of this volume before us, doubtful. Scholars have read it *Ninib,* or *Nindar* or *Ninrag* etc., etc. That these pronunciations have to be discarded now is evident from several Aramaic endorsements to be found on the tablets here published where *NIN.IB* corresponds to the Aramaic *'nrsht,*—thus I read with Sayce, Johns and Clay in his Introduction. In his Preface, however, the latter changed his reading wrongly to *'nvsht*—Hilprecht's reading *'nrshch* is out of question.

How is this name to be pronounced?

Without bringing in arguments against the readings so far proposed, (Johns: *Urashtu,* or *Arashtu (Aursht), Expository Times,* Dec., 1904, p. 144; —Sayce: *In-arishti* = "lord of the mitre," *Expository Times,* Dec., 1904, p. 140, conf. *Religion of Ancient Egypt and Babylonia,* p. 357;—Prince Enurêshtû: *Journal of Biblical Literature,* 1905.), I shall give here my own pronunciation and arguments in support of it. The name *'nrsht* has to be read *irrishtu* and is as such the feminine of *irrishu* "farmer," which word again is to be derived from the root *erêshu,* "to irrigate, to cultivate the ground."

As soon as I received this book (July 5th, 1904) from Professor Clay, I wrote to him (July 6) that I thought *irrishtu* was the correct pronunciation of the Aramaic equivalent. In a letter from Professor Clay to me, dated July 18, 1904, he makes several objections to this reading. Supposing that the same objections might be made also by other Assyriologists, I shall try to meet them here:

1. "In the first place," Professor Clay says, "the vowel *i* would be represented at least in some instances by *ayin* instead of *aleph.* This is not so important."

This is not only "not so important," but absolutely wrong! It *never could* be represented by *ayin,* because *irrishu* is like *ikribu* etc. an *i'ph'âl* form: Del. Gram., p 170, 30, c.—hence the *i* has to become an *aleph.*

2. "Again," he says, "while *n* is used to dissimilate as well as *r, l, m* in Semitic languages, do you find it with *r*? I have no helps at hand, but this example of the process is unknown to me from memory. Then you surely would find the common word for farmer written the same way, i. e., *inrishu.* If *inrishu* occurred it surely would be pronounced *irrishu.* The thing does not appeal to me."

Indeed this mode of reasoning could not possibly appeal to any one else. Professor Clay apparently missed the force of my argument!

The question here is *not* whether we might expect in Assyrian also such writing as *inrishu* or whether the dissimilation is also found with *r,* but it is

this: *how could the* ASSYRIAN *word irrishu correctly be transcribed into Aramaic script?* We know that in the Semitic languages (with the exception of the Minaean and Babylonian-Assyrian!) consonants are never written doubly. But *irrishu* has *two r*'s, how could the two *r*'s be expressed in *Aramaic transcription* or script? They could not by *rr* but only by either *r* or *nr*. And the writer by choosing the transcription *nr* came as near to the Assyrian *rr* as he wellnigh could, seeing that even Professor Clay admits that a writing *inrishu* would surely be pronounced *irrishu*. From the Aramaic transcription we may not, however, infer that we also should find in Assyrian the word *irrishu* written as *inrishu*—that is unnecessary to expect and not required by Grammar, Lexicon or "hardness of pronunciation." The hardness has been removed by assimilating the *ayin* to the following *r*: *ĕrishu* = *irrishu* (Del. Gr. §47). A "dissimilating" of the *rr* is, therefore, not necessary, and, because not necessary, not to be expected, or not to be found. Thus, to sum up, we would say, the Aramaic *nr* is the best possible and most accurate way to transcribe the Assyrian *rr*.

3. The last linguistic or religio-historic difficulty, which Clay, however, does not mention, to be explained here is the final *t*. *Nin.IB* is and was, no doubt, a *male divinity*. But here he is female or treated as a female. Can this peculiarity, this feminine gender of *Nin.IB* be proved also from the Assyrian inscriptions themselves? Surely it can.

We know that *Ishtar* was both female and male. *Innana* is not only = *Ishtar*, but also = *Sin*. The god *SUCH* is both = *NIN.IB* and = *Ishtar*. The god *A-A* is not only the *wife of Shamash*, or his bride, but also = *Shamash* himself. The divinity *AN* is both = *Anum* (male) and *Antum* (female). The *Nin-Dintir-ki* is not only = *Marduk* (male) but also = *Bêlit-Bâbili* (female) etc., etc. So also *NIN.IB*. If *male*, *NIN.IB* is = *god IB* with the pronunciation *urash*, and if *female* he is likewise = *NIN.IB(urash)*, the wife of *god IB(urash)*. *NIN.IB*, thus, is, like *Ishtar*, both male and female and has, therefore, to be read if treated as a *female*: *irrisht(u)*, and if treated as a *male*: *irrish(u)*.

A striking corroboration of my contention that *NIN.IB* was looked upon as *male and female* even in later (Assyrian) times is to be found in one of the letters published by Harper, Vol. IV, p. 370 = Rm. 76. Here the writer implores among other gods who shall bless very greatly the lord his king, also the following pairs (Obv. l. 4 f.):

(ilu)Amar-ud (=Marduk), *(ilu)Tsar-pa-ni-tum*,

(ilu) AG (= Nabû), *(ilu) Tash-me-tum*

(ilu) XV (=Ishtar) *sha (alu) Ninâ-ki* (=male!), *(ilu)* XV (=Ishtar) *sha (alu) Arba'-ilu* (= female!)

(ilu) NIN.IB (= male), *(ilu) NIN.IB* (= female)—so clearly in the text.

(ilu) UGUR (= Nergal), *(ilu) La-ats*.

Now as the gods at the left side are apparently the husbands of those mentioned on the right side, it follows that *NIN.IB* is the husband of *NIN.IB* his wife!

The best way to transcribe *NIN.IB*, wherever we may be in doubt whether the male or female *NIN.IB* be intended, is by *irrish(t)*.

This pronunciation throws also a welcome light on the gloss *urash*. It shows

that *urash* and *irrish(t)* are one and the same word and that *urash* is simply the Amurritish (Canaanitish) pronunciation of the Babylonian *irrish(t)*.

(For the interchange of *i* and *u* and *i* and *a* conf. especially the Tell-Amarna letters: *imlik* (Assyr.) is in T. A. = *im-lu-uk*, London 16, 26 *et pass.*, or vice versa: *ibalut* (Assyr.) = *i-ba-li-it* (T. A.): London, 29, 9; *igarib* (Assyr.) = *i-gi-ri-ib* (T. A.): Berl. 14, 6—the Amurritish pronunciation of *urash* then would have been something like *üräsh*. (In this connection see also my *Bel the Christ of Ancient Times*, p. 16, 8.)

From this again it would follow that the god *NIN.IB* was unknown in the Babylonian Semitic pantheon— a fact corroborated by the oldest inscriptions. *NIN.IB* does not occur in the oldest documents till about the time of the "kings of Ur and of the four corners of the world," when he was identified with Nin-Girsu. At this time there also appear in the Babylonian pantheon: Dagan, Marduk, Nergal (Shitlamtauddua). The probability, then, is, that NIN.IB was like Marduk an *Amurritish god*. Palestine or Canaan was a part of the "land Amurru"—hence *NIN.IB* had his temple in Jerusalem and was there called "god *MAR-TU*," i. e., the "god of the Westland." And because NIN.IB had been identified with Nin-Girsu, the god of thunder, lightning, rain, stormflood and clouds, it happened, that MAR-TU = Amurru received also the signification *abubu* = "stormflood."

The Babylonians hearing their Amurritish brethren (after they had invaded Babylonia) call the Sumerian god *NIN.IB üräsh*, employed this gloss and identified the *üräsh* with their own *irrish(t)*, i. e., with Nin-Girsu. In this wise *NIN.IB* and Nin-Girsu became one and the same god.

(dingir)IB(urash) or *(dingir) NIN.IB(urash)* furthermore is the same god as *(dingir) ENGAR*, whom we know to be = *NIN.IB. ENGAR*, or *(galu)ENGAR* is = *ir-ri-shu*, hence *(dingir)ENGAR* = *(ilu)irrishu* = *NIN.IB.*

We have seen above that *NIN.IB* was identified with Nin-Girsu. Nin-Girsu as god of the rain was also the god of fertility of the ground—hence the patron deity of the "farmers." A "farmer" (= *irrishu*, or *ikkaru*) thus came to be called *Ur-dingir-Nin-Girsu*, i. e., the "servant (dog, *kalbi*) of Nin-Girsu." Taking all these fact into consideration, there can be absolutely no doubt that the pronunciation of the Aramaic *'nrsht* is *irrisht(u)* or *irrish(u)* as the "gloss" *urash* shows. *NIN.IB* thus is both *male* and *female*, like Ishtar, and, we may add, like all the other gods.

Lastly the feminine noun *(Irrishtu)* and the masculine verbal form *uballit* do not offer any difficulties either. Such compositions and constructions are likewise very often found especially with *Ishtar* or *Nanâ*—the male and female divinity. Cf. e. g. *Ishtar-ishmeshu, Damu-nâtsir* in the Hammurabi dynasty—yes such constructions are the only correct ones—for the verbal form in a masculine name *must be* masculine, even if connected with a goddess—hence *Irrishtu-uballit* and not *Irrishtu-tuballit!*

By way of corroboration to the above the following: *(ilu)ir-resh* in IV R34, 51b = BP. 50 is according to the context = *NIN.IB.* In Reisner, *Hymnen, p.* 134, col. II, 20, 21, we have the following remarkable passage:

(dingir) ir-r[esh ur-sag]|ugun (sic! =fem.!) *shach*(!)*-ra* = *(ilu) e-ri-[esh* (cf. *loc. cit.*, p. 86, 8) *qar|-r]a-du be-el* (= masc.!) *[ir]-tsi-ti;* i. e., *(ilu) irresh* appears here likewise as male and female. *Ugun-shach* means literally

"The Lord of the Pig"—hence *NIN.IB* is likened unto a "pig"; IV R 13, 41: *ki ... a shachê lû tsallat*, "thou mayest rest like a pig." Irresh, however, is not only likened unto a pig, but is even called a "pig": *(ilu)chu-mu-si-ru* (Reisner, p. 48, 10, cf. l. 5.6: *(dingir) MAR.TU = (ilu) A-mur-ru*), because the "pig," the emblem of plenty is holy to him as "god of plenty." As "Lord of the Pig" he appears also "as chief messenger" of AN.NA, i. e., of the highest god, whether he be Anu or Enlil or Marduk, carrying a "bright scepter" = the thunderbolts (cf. De Clerq, No. 194: *lugh-zi AN.NA gish Pa azag shu-ul et pass.*), by means of which he governs the people in the name of his father.

B. *(dingir)KUR-GAL = 'vr.*

Another very interesting and important fact brought out by Professor Clay's publication is the equation *(dingir)KUR-GAL = 'vr.*

Professor Clay leaves the question open as to the identification and reading of this *'vr*. He thinks, however, that we have here a "foreign deity" possibly the same as *U-ru* in *U-ru-mil-ki* or as *Amurru*.

The god *'vr* has to be pronounced *Ur(u)* and is the same word as *Ur* in *Ur* of the Chaldees, *Uru-shalem* (= Jerusalem) *Uru-milki, etc.* We know that at the time of the Sumerians, cities were always called "the place of that and that god," e. g., *EN-LIL-ki* = "Enlil's place," *NUN-ki* = "NUN's place," *Ud-nung-ki* = "the place of the abode of UD." So also Ur was called *Uru-nung-ki*, i. e., "the place of the abode of Ur(u)." In Ur the moon-god *Uru-ki* or only *Uru*, (for the reading of *Uru-ki*, resp. *Uru = Ur*, see also Zimmern, KAT², p. 362), i. e., Sin, was worshiped. *'vr* would thus become = *Sin*.

But, as Professor Clay correctly states, the god *KUR-GAL* was the old Bel, i. e., *Enlil*! We would have to make, then, the following equation:

KUR-GAL = Enlil (Bel) = *'vr = Sin = Shalem = NIN.IB.*

How is this to be explained historically?

We know that Marduk and Ashshur were identified with Enlil (Bel) because they were like Enlil the gods of the "whole of Babylonia" or of the "high- and the low-land" of Babylonia. But to be god of the "whole of Babylonia" is the same as to be god of "heaven and earth," because microcosmos and macrocosmos are one and the same thing in the religious conceptions of the Babylonians. "Heaven and earth" or the "cosmos" were considered to be a "mountain" *(kur)* or a "great mountain" (kur-gal)—to be "god of Babylonia," then, is the same as to be "god of heaven and earth" or "god of the mountain" or "great mountain" *(dingir KUR-GAL)*. From history we furthermore know that the kings of Ur were also "kings of Shumer and Akkad," i. e., of the whole of Babylonia, the high- and the low-land; hence also the city god of Ur—Sin—must have been at that time the god of the whole of Babylonia or of "heaven and earth" or of "the great mountain." Sin thus would have been identified with Enlil, the *(dingir)KUR-GAL*, whom he had displaced.

If our supposition be correct that our *'vr* be the same as that in *uru*-Shalem, then we would have to maintain that *'vr* be also = *Shalem*. Shalem has been shown by Winckler and Zimmern (KAT², pp. 224 and 474) to be = *NIN.IB*—hence *'vr = uru = Sin = NIN.IB;* in other words, the moon-god must have played at some time or another the rôle of *NIN.IB*. Without going here into a detailed discussion I shall mention only three passages which prove beyond a shadow of a doubt our statement.

1. According to II R 57, 68 is *NIN.IB* also called *(dingir)NE.SU* or *Bil-dar*, but in II R 57, 56 it is *(dingir) EN.ZU = Sin* who has the name *NE.SU*.

2. In II R 57, 61. 62 Sin is called the *(dingir) Ud-ba-nu-il-la*, which name means according to II R 26, 38c, "the not-sparing storm" *(ûmu(mu) la pa-du-u)* and according to Zimmern, *Ritualt.*, p. XLV, No. 27, Rev. l. 14 this name is the name of a weapon and is there translated by "the one without equal" *(shu la mach-ru)*. But in II R 19, No. 2 Rev. 25, 26 this weapon is personified and appears as a weapon of *NIN.IB*, being translated here by "hero who destroys the mountain" *(ed-la mu-ab-bit shadi-i)*.

3. That *NIN.IB* was the same as *NIN.Gir-su* or *IM* (= Rammân) has been shown in my "Creation Story." In K2100, 13 god *IM* is called *(ilu) TUR-ku*, but in II R 48, 33 it is Sin(=ilu xxx) who bears this name.

That NIN.IB and Enlil have been identified is well known; cf. the names *(ilu)L* and *(dingir) EN-KUR-KUR*. That Sin is also = EN-LIL follows from the celebrated Nannar-hymn (IV R 9) compared with what has been said in my "Bel, the Christ of Ancient Times" and in my "Creation Story."

Taking all these facts into consideration we would have to say:

'vr signifies the moon-god in the rôle of EN.LIL—of Enlil not only "as god of the wind" (thus = NIN.IB), but of Enlil as the "god of the world," hence *'vr = Kur-gal*, the god of the "great mountain" or "world."

For a speculative mind the following:

Abraham left *Ur* of the Chaldees where god *Ur* was the highest god, went to Harran, where *Ur* again was worshiped as the "god of heaven and earth," and finally settled down in "the land of the city of *U-ru-sa-lim*" (T. A., Berlin, 103, Rev. 46). The god of Abraham, before Yahveh made his appearance, was *El shaddai* (Exod. vi. 2, 3; "Creation Story," p. 58), i. e., the "god of the two mountains." The god of the two mountains is either called *(dingir) Lugal(EN)-kur-kur*, or *(dingir)kur-gal*, as such he is either = Enlil or NIN.IB. But according to our Aramaic endorsement *(dingir)kur-gal* is = *'vr*, hence, god *'vr = NIN.IB = EN-LIL = kur-gal = kur-kur = el shaddai = god of Abraham = Ur*, The god of the *(alu)u-ru-sa-lim*, or the god of the land of the city *(mâtu alu)* of *ú-ru-sa-lim*, or the god of the city of the land *(alu mâtu)* of *ú-ru-sa-lim* is thus proven to be "the moon" (*uru*—notice the importance which the "new moon" *(uru = nannar)* plays in the Old Testament), the "god of thunder, lightning, clouds, rain etc. (NIN.IB = *sa-lim* = *shalem*) and the "god of the *shaddai*," i. e., the god of the whole of Palestine = Judah and Israel = heaven and earth = world—all in one "person" and *yet distinct*: The moon-god as god of heaven and earth reveals himself in the thunder and lightning, which latter becomes thus his *qol* or "voice" or *mal'ak*, "messenger." So it happened that after Yahveh had taken upon himself the attributes and functions of *El shaddai*, the *mal'ak* Yahveh although distinct from Yahveh was yet identified with him! Time and space, however, forbids to go farther into detail here. The above, therefore, will have to suffice for the present.

C. How is *AN(mesh)* at the beginning or at the end of certain proper names to be read?

Hilprecht wants to establish for *AN(mesh)* the reading *ili*—a *scriptio plena* for *il*, "god"—regarding at the same time the *i* in the absolute case "a

a peculiarity of West-Semitic proper names." This writing *AN(mesh)*, he says, is "used by the Babylonian scribes of our tablets exclusively in connection with West-Semitic proper names" and "must have been chosen intentionally to discriminate between the West-Semitic pronunciation of "god" *(ili)* and that of the Babylonian *(ilu)*."

Professor Clay, on the other hand, accounts for the writing *AN(mesh)* in this wise: The writing AN(mesh) is found in foreign (West-Semitic) names. The Babylonian "scribes, in all probability, knew that Elohim, the Hebrew word for God, was plural, is it not natural to suppose that they (the Babylonian scribes) in their efforts to distinguish between *ilu* and the Hebrew *El* introduced this combination of signs, *AN(mesh)*, which carried with it the idea of plurality?" In other words: Hilprecht sees in *AN(mesh)* a writing to express a certain *pronunciation (ili)*, Clay considers it to express a religious conception: *"the idea of plurality."* Both scholars agree that this writing *AN((mesh)* is peculiarly *West Semitic!*

Against this has to be said:

1. The writing *AN(mesh)* is found also in *Babylonian names*—pure and simple—hence the occurrence of *AN(mesh)* in a name is by no means an indication that that name is West-Semitic!

a. The name of the city of Babylon is written, as we saw above,

Bâb-AN-ki,
Bâb-DINGIR-RA-ki,
Bâb-ilu(mesh)-ki,
Bâb-ilu-ilu-ki,
Ba-ab-NI-NI.

NI-NI, we know, has to be pronounced *i-li*, i. e., *ili*. From this it follows that *AN, DINGIR-RA, ilu(mesh), ilu-ilu* have likewise to be pronounced *ili*—here, then, we have a pure *Babylonian* word where *ilu(mesh)* has the pronunciation *ili*.

The writing *NI-NI* is in each and every case a *plural*, (conf. Code of Hammurabi, XLII, 5: *AN ra-bu-um a-bu NI-NI* = "the great AN, the father of the gods"), so is *ilu-ilu* and *ilu(mesh)*. But *AN* or *DINGIR-RA* is a singular—hence *NI-NI* = *ilu-ilu* = *ilu(mesh)* is a plural expressing at the same time a *singular;* in other words, *NI-NI* = *ilu-ilu* = *ilu(mesh)* is a *plural of majesty.* This is also evident from the following:

b. Labartu (although = Antum, i. e., the wife of Anu) is yet called "daughter of AN-NA," i. e., *dumu AN-NÀ* =

ma-rat (ilu)Anim, A S K T, No. 11, III, 59, IV R 55a, 33, 38, 39, *et pass.*

or "the daughter of Anu of the world," i. e.,

mârat(ilu)A-nim sha AN-e (= *shame-e* = world! not heaven) IV R 55b, line 9.

or "daughter of Anu of the gods," i. e., *mârat (ilu) A-nim sha ilu (mesh)*: IV R 53b, 37,

or "daughter of the ili," i. e., *mârat ilu(mesh)*: IV R 55b, 12—

hence Anu or Anu of the world, or Anu of the gods, is = *ilu(mesh)* = *ili* = the highest god, the god of the world or of "heanven and earth." As the *heaven* is the *male (father)* and the *earth* the *female (mother)*, it so happens that Labartu could also be called a daughter of Anu (= heaven) and Antum (= earth, see my *Bel, the Christ of Ancient Times*): *(ilu)A-nim abu-ki (ilu)*

An-tum ummi-ki (IV R 56b 45.46, comp. with ll. 41 and 28). Furthermor[illegible] if ilu(mesh) be = Anim then we might substitute the former for the latt[illegible] and translate e. g. IV R 53b 37 quoted above, by mârat ilu(mesh) sha i[illegible] (mesh) = "daughter of the god of gods." As such a "god of the gods" A[illegible] always and invariably heads all the so-called "lists of gods," where the S[illegible] mitic scribes translate AN either by A-nu-um or by i-lum. Ilum becom[illegible] thus the highest god of the Babylonian pantheon, as such he is the "ili s[illegible] ilâni," "the god of the gods."

c. Anu-ili, although originally the highest god, was later on displaced by Enlil who now becomes the *Anu,* or *ili of the gods.* This is not only evident from what has been said in my *Creation Story,* and *Bel, the Christ of Ancient Times,* and from what was maintained in my Review of Harper's *Hammurabi,* but it is even found in the inscriptions themselves. In a hymn to Shamash IV R 28, No. 1a, ll. 17, 18, we read:

Line 17: *(dingir) UD it-ti (dingir) En-lil me-en,* which is translated line 18 by *(ilu)Shamash tu-kul-ti (ilu) A-nim u (ilu) Bêl at-ta;* hence *(dingir) En-lil* = *(ilu)A-nim u (ilu) Bêl,* i. e., he is "the god, the lord!"

d. When Marduk became the highest god of the whole of Babylonia, i. e. of Shumer and Akkad, the *high-* and *low-*land, or what is the same, the god of heaven and earth, he of necessity had to be called the *An u (ilu) Enlil,* "the god, the lord," as was shown in my review of Harper's *Hammurabi.*

e. From historic inscription of the oldest Babylonian period we know that Sin, the city god of Ur, must also have been the god of the whole of Babylonia, i. e., of Shumer and Akkad, the Babylonian high- and low-land. Such a god he was at the time of Ur-Bau and Ur-Gur. It happened that Nabûnâ'id restored one of the temples which Ur-Bau and Ur-Gur had built before him in honor of their most favored god, the god Sin. Ur-Gur and Ur-Bau called themselves "king of Ur, king of Shumer and Akkad." Now [illegible] to be "god of Shumer and Akkad" be the same as "god of heaven and earth," Sin must have had the title which originally belonged to Anu—and he did have it. Nabûnâ'id, true to his reputation of being a most careful antiquarian, repeats verbatim in his inscriptions the exact titles of Sin—titles by which he was called at the time of Ur-Bau and Ur-Gur—and they are ("Thoncylinder aus Ur," *A. W. Keilschrifttexte,* p. 43, col. I, 28):

(ilu) XXX (= Sin) *EN ilu(mesh) sha AN-e u KI-tim LUGAL il[illegible] (mesh) ilu(mesh) sha ilu(mesh)*

a-shi-ib AN-e GAL(mesh) EN E-GISH-SHIR-GAL sha ki-rib Ur[illegible]-unug-ki;

and in col. II, 3 ff.:

(ilu)XXX BE-NI (= plural of majesty in contradistinction to BE-[illegible]) *ilu(mesh) LUGAL ilu(mesh) sha AN-e u KI-tim*

ilu(mesh) sha ilu(mesh).

Above we have seen that *ilu(mesh)* was = *AN* or *Anum,* hence Sin must have been identified also with Anu—and he was: IV R 9, 6a. Comp. also III R 35, 4: *uru (SES)| An-nu-ti.*

The result then is this: *AN(mesh)* has to be pronounced *ili* (Hilprecht is correct), but it also carries with it the idea of plurality (Clay is correct) or better it is a *pluralis majestaticus,* signifying in each and every case the highest god, the "god of the whole of Babylonia," the "god of heaven and earth."

It is found also in *Babylonian names* (this against Hilprecht and Clay), such as *Bâb-ilu(mesh)-ki*—hence cannot be called a "peculiarity of West-Semitic names." Furthermore as the Sumerian *AN* is in the lists of gods invariably rendered by the Semitic *ilum*, it follows that *ilu(m)* is the *highest god whether he be AN, Enlil, Marduk, Sin or any other god.* To express "the majesty of this god" also in script and sound the scribes employed the "plural of majesty" *ilu(mesh), NI.NI, ilu-ilu,* which have to be read *"ili."* Again, if *ilu(mesh)* be also = *NI-NI,* it follows that the latter is only a "phonetic" writing of the ideographic *ilu(mesh)* and that it too signifies in each and every case *"the* god"—as such he occurs already at the time of the "kings of Ur and Shumer and Akkad," where we find the proper name *A-num-NI-NI,* i. e., "Anu is *the* god," or still better, "ilu is *the* god." Lastly, if *ilu(m),* i. e., *ili,* be = An, then can A-nu-um only be a Semiticized Sumerian pronunciation of AN, i. e., *Anum is* = *An* + Semitic nominative ending *u* + *mimmation.* Yes, even AN-NA was semiticized as proper names such as *Rê'a-An-nu,* or *Atamar-An-nun-su* (= AN-NA + ut-su = AN-NA + us-su = AN-NA + un-su = AN-nu-un-su!) show.

Dr. Hilprecht tells us (p. xiv) that the Murashû tablets know of two other West-Semitic words for god, viz., *ilai* or *ilachi* and *ilucha.* The proper names which he adduces in support of this are not convincing. The name *Sham-si-ila-ai* may be read also *Sham-si (ilu) Ai* and *might* be translated like the name of the eponym for the year 820: *(ilu)UD-(ilu)Ai* by "Shamash is Ai," for we know that the *(ilu)Ai* of the *shamê* is expressly said to be = *(ilu) (u-tu)UD.* Such formations of proper names consisting of two names of gods are by no means rare; they are even found in the oldest inscriptions so far published. In a tablet (numbered [10]a:14) of Thureau-Dangin's most excellent *Recueil de Tablettes Chaldéennes* we find the name *(dingir)Su-kur-ru-Im-gig-ghu,* which can be translated only by "god Su-kur-ru is the Im-gig-ghu." Im-gig-ghu is, as we know, Nin-Girsu as the "dark cloud that flies"—therefore pictured as a bird (comp. the emblem of Shirpurla!). But in our name here this "dark flying cloud" is said to be dingir Su-kur-ru, hence *(dingir) Nin-Gir-su* = *(dingir) Su-kur-ru.* Likewise the names *(ilu) Nusku-(ilu)Ai,* or *(ilu)Nabû-(ilu)Ai* have to be translated by "Nusku or Nabu, is Ai (= Shamash)." *(Ilu)Ai* = *Shamash* plays in these proper names the same rôle as Nin-Girsu, or Irrish(t), i. e., Shamash, at one time or another, had acquired in addition to his old meaning "sun-god" also the attributes of the god of the storm and lightning, rain and clouds. This is the reason why *UD* means not only *shamshu* = "sun," but also *ûmu* or "storm," yes *UD* was even called the *UD-GISHGAL-LU,* i. e., "the dark storm," a name borne by Irrish(t), Nin-Girsu, and Nergal! And because Shamash is also = *(ilu)Ai,* who again is = Ishtar, therefore even Ishtar is likewise called an *UD* or *ûmu,* i. e., "storm"! That this is the only possible explanation and translation of these names follows also from a comparison of the writing of the name of the eponym for the year 723: *(ilu) Irrish(t) (BAR)-(ilu) Ai* with that for the year 737: *(ilu)Irrish(t)(BAR)-Ai,* (See Pinches, *The Religious Ideas of the Babylonians,* p. 11, reprint of a paper read before the Victoria Institute), i. e., "Irrish(t) (male or female) is Ai (male or female)." If we had in these two names, just quoted, a word "ilai," as Hilprecht wants it, then the *ilu* in the eponym's name for the year 737 could never have been

omitted! Whether the names *I-la-i-a-bi* and *Ila-ai-abi* quoted by Hilprecht according to Johns A. D. B., p. 15 belong together, I am not prepared to say because Johns's book is not accessible to me. According to the principle laid down above I would translate I-la-i-a-bi by "my gods (= dual! cf. the Babylonian *twin-gods*(!) who were considered to be *one god*!) are a (my) father" and Ila-ai-abi by "Ai is my (for a) father."

Not very much better is the case with *ilachi*, which latter word Hilprecht takes to be a West-Semitic form for *ilu*, "god". In support of this Hilprecht adduces one example, viz., *Mannu-kî-i-la-chi-i*, "abbreviated (therefore the last *i* lengthened) from a name like Mannu-ki-ilachi-li', "Who is strong like god." A failure to understand the religious conceptions of the Babylonians led Hilprecht to this explanation. To give this religious conception of the Babylonians here in a nutshell, I may be permitted to state the following:

The Babylonians believed in *Trinities*, each trinity consisting of *Father, Son, Mother*, the latter was also considered to be the wife of the Son (under another name). The oldest trinity is AN-EN.LIL-AN = NIN.LIL. AN as Father is "heaven and earth," EN.LIL as Son is "the lord of the *rain-storm*," AN as Mother is "the earth" or lower half of "heaven and earth" as a whole. This "mother earth" is married every spring by the Son or *rain*-storm. When EN.LIL displaced AN in the rulership of the world the trinity read: EN.LIL = Father = heaven and earth; NIN-GIR-SU = Son = rain-storm; NIN-LIL = Mother = earth = Bau, "the giver of green things." The "Son" was in each and every case "the mighty hero," "chief messenger" of his Father—such a hero namely that he had no rival or equal. Hence the constant emphasis laid upon this side of the "Sonship." Therefore Nin-Girsu is again and again called "the lord *without equal*," "warrior, furious tempest, *who has no rival*." (*Creation Story*, p. 43, 3.)

And if the "Son" be a "lord *without equal*," be a warrior "*who has no rival*," then, of course, it is only natural to expect, that the Babylonians should express the same idea somewhat differently by "who is like the Son"? here giving the name of the god who happened to play the rôle of the Son according to their conception. We also can prove now that the third person or "Mother" of the Babylonian trinity was in each and every case identified with the second person, i. e. with the "Son." As the third person is always a *female* it happened that in names like "Who is like...." a female goddess could be mentioned, as e. g. Ishtar, Nanâ, Bau (see Thureau-Dangin, R. T. C., p. 140, [400]c; 48 rev. col. II, 26: *a-ba(dingir) Ba-ú-gim*, comp. *loc. cit.*, p. 139, obv. I, 20: *Nin-gim-a-ba-gim*—both of which names occur already at the time of the "kings of Ur and Shumer and Akkad"). This female goddess, thus mentioned, has always like the Son either a "warlike character," or is a "protecting deity," for the Son as god of "thunder, lightning, rain and clouds" smites the enemies but protects his people, hence such names as (I) *a-a-L-da-ri* = (I) *man-nu-ki-ma-(ilu) EN.LIL-cha-tin* (V R44, 42c, comp. also in our texts here No. 71, 14) "who protects like Enlil?" We know that "*the sphere of a god*" where he is "king," "lord" or otherwise "supreme," always stands for the god himself (comp. kur-gal Enlil, Marduk "the son of Eridu" = son of Ea, etc., etc.), hence we have even such names as (I) *man-nu-ki-(a-a) Ar-ú-a*, i. e., "who is like the cit

of Arba'-ilu," = "who is like Ishtar of Arba'-ilu," (see Harper, *Letters*, V, No. 531, p. 574 = 81-2-4,50, Rev. l. 13).

Although the trinity AN-Enlil-AN must be maintained as being the oldest, yet from the *historic* inscriptions, so far accessible, we know that Enlil had already displaced AN. Historically, therefore, Enlil-Nin-Girsu-Ninlil (Bau) is the oldest trinity. No wonder, then, that we should find in the inscriptions written at the time when Nin-Girsu was considered to be *the* Son, *the* lord *without equal*, the warrior *who has no rival*, such names as:

A-ba-(dingir) Nin-Gir-su-gim, "who is like Nin-Girsu." (Thureau-Dangin, *Recueil de Tablettes Chaldéennes*, p. 138, No. [399]c: 47 revers col. 1,20).

If it be true that in such names as "who is like...." always a divinity must be mentioned who at one time or another played the rôle of the "Son" or was at least identified with the "Son," then the name *Mannu-kî-i-la-chi-i* cannot consist of Mannu +ki-i+i-la-chi-i, but must consist of Mannu+ki-i +la-chi-i, i. e., "Who is like la-chi-i." I consider, therefore, the double *i* as a dittography. For such dittographies in our texts see: 29:1 = *sharru*, repeated in the second line; 63: 1 *eqlu;* 76: 10 *u-sha-az-za-az-za-az-ma.*

But who or what is la-chi-i?

La-chu-u according to Sc. 1b, 6 is = [MAS-MAS], which MAS-MAS again is explained in lines 8-9 by Lugal-gir-ra, or Shit-lam-ta-ud-du-a—two names for Nergal! MAS-MAS is also = NIN-IB, and NIN-IB is = Nin-Girsu, see also Delitzsch, *Handwörterbuch*, p. 375a. Hence we have to see in la-chi-i a name or attribute of Nergal, or NIN-IB, or Nin-Girsu—all of whom were at one time or another considered on account of their storm- or warlike character, to be *the* Son, like unto whom there is none other. Furthermore as the *u* in *la-chu-u* is long, therefore also the *i* in *la-chi-i must* be long, hence we have here not *necessarily* an "abbreviated (therefore, the last *i* lengthened) form."

The form *ilucha* for ilu is found by Hilprecht in the name *"Mannu-lu-cha-a* (abbreviated from a name like Mannu-ki-ilucha-li')." But according to what has been said, the name must be explained by Mannu +[ki]+ lu-cha-a. *Lu-cha-a* would thus become a "side-form" of la-cha-a, the *u* in *lu* being caused by the *u* in *Man-nu*!

This side-form proves to me beyond a shadow of a doubt that lu-cha-a = la-chi-i, for it is possible that in abbreviated forms certain words and *case-endings* may be omitted, but examples where a word is abbreviated at the beginning, as is done here, if Hilprecht were right, (lu-cha-a for *i*-lu-cha-a), are not known to me, nor do I think they ever will be known simply because such suppositious explanations are unwarranted. (The abbreviations CHI or CHU for Achu, or Dad for Adad etc. are not to the point here, because they do not exist!)

From all this it will be evident that the Murashû tablets do not know of two other West-Semitic words for god—they neither know *ilai* or *ilachi* nor *ilucha!*

The following passage, written by Clay (p. 2), I cannot understand:

"In Vol. IX a tablet (Why did Clay not give us the No. of that tablet to save time in looking it up? It is No. 109.) is dated on the seventeenth day of Shabatu in the forty-first year of Artaxerxes I. Of the tablets here pub-

lished one is dated on that day, (This tablet I failed to discover! In the Table of Contents where the day, month, and year of each tablet is given, there is no such tablet mentioned. By the way, read in Table of Contents sub text 4, day 14 for 15!), and three (These are Nos. 1, 2, 3 of Vol. X) previous to it, in the year of the accession of his successor, Darius II. In other words, the first tablet of the latter's reign was written on the fourth of Shabatu, i. e., thirteen days previous to the seventeenth, given as the last date known in the reign of Artaxerxes I. How can this apparent discrepancy be explained? The scribe made a mistake. Either the tablet belongs to the fortieth year....or having been accustomed, for so many years, to date tablets in the reign of Artaxerxes, in writing this tablet he failed to remember that a new king had begun to reign....Another unpublished tablet, however, of the forty-first of Artaxerxes (C. B. M. 5310) is dated on the third of Shabatu, which is the day previous to the one on which the first tablet was dated in the reign of Darius II, i. e., the fourth of Shabatu. If this dating is correct Darius II, in all probability, began to reign on the third or fourth day of Shabatu." So far Professor Clay.

1. The *last year* of a ruler is in each and every case identical with the *shur-rat sharru-ti* of his successor. After the forty-first year of Artaxerxes I = the *shur-rat sharru-ti* of Darius II, begins the latter ruler's *first year*.

2. The regular "year" of the reign of a king begins with the 1st of Nisan or with the first day of the first month of the Babylonian Calendar year.

This is apparent from a comparison of Nos. 4 and 5 with No. 7.

No. 4, 28 is dated: 14th of Addar of the 41st year (etc. of Artaxerxes) which is the beginning of the reign of Darius.

No. 5, 1.2 speaks of "the end of Addar of the 41st year (etc. of Artaxerxes) which is the beginning of the reign of Darius" and is dated: 17th of Addar of the beginning of the reign of Darius."

No. 7 speaks of "the 41st year" or of "the beginning of the reign" of Darius but is dated on the 2d of Nisan of the 1st year of Darius.

Now as Addar and Nisan are two successive months, and as Addar is the last month and Nisan the *first*, it follows, because Addar as last month of the year is reckoned here as belonging to the "41st year," or "to the beginning of the reign of Darius," that the regular "year" began with Nisan.

3. The king's *entrance* upon his *first regular year* of reign was connected with festivities and was called the *a-tsi-e sharri* or "going out of the king."

This follows from a remarkable tablet (No. 1) published and translated, but entirely misunderstood, by Clay, as the annotations to that document on p. 22 show. Bêl-nâdir-shumu rents for the consideration of one and a half mana from a certain Aplâ a house. He rents it "from the fourth day of Shebat unto the going out of the king." The tablet is dated: DIN-DIR-ki (= Babylon), the fourth day of Tashritu of the year which is the beginning of the reign of Darius, king of the lands." The situation is perfectly plain: As soon as the news of the king's (Artaxerxes's) death had reached Nippur, or Bêl-nâdin-shumu, chief representative of the house of Murashû, he (Bêl-nâdin-shumu) sets out on a journey to Babylon, where we find him according to the subscription or date of this tablet. Here he rents a house from Aplâ. This house is, as it is clearly stated, situated on the *a-ra-am-mu* of Bêl. This Bêl, because we are in Babylon, can be only Marduk! The

terminus a quo of this lease is the fourth of *Shebat*, and the *terminus ad quem* the *a-tsi-e sharri*—this latter "going out of the king," then, must be a *certain day* on which the *atsu* took place. We know, however, that on New Year's day "the king of Babylon" *went out* in solemn procession "to seize the hands" of Bêl-Marduk by means of which he became the rightful king of Babylonia. That this procession took place on the street *Ai-îbus-shâbû* and led to the temple of Marduk in Babylon, is well known— hence the *a-ra-am-mu* (comp. Hebr. *'armôn*) of Bêl must refer to the immediate surrounding territory of the temple of Marduk—that territory namely in or at which the procession passed, thus affording a good look at that solemn and, no doubt, pompous spectacle! The same custom still prevails to-day! At the coronation-procession of our kings rich people rent houses on streets or near those churches through which, or to which, that procession moves! The *a-tsi-e sharri*, then, can only have taken place on the *first of Nisan*, the Babylonian New Year's day. Bêl-nadin-shumu thus occupied from the fourth of Shebat to the first of Nisan a house on the *a-ra-am-mu* of Bêl in Babylon. On the *second day of Nisan* we find him again in Nippur where he transacts his business as usual (No. 7, 19!). This tablet, then, *Bel-nadin-shumu* must have brought home with him from Babylon and must have put it up among his business documents in Nippur where it was found. From all this it will be apparent, that that tablet does not "refer to the time when the new king officially visited the cities; or perhaps the house was rented for the uncertain period terminating with the reign, for a representative of the crown, or for the use of the prince who lived in Nippur," as Clay wants it. But furthermore this tablet throws also a striking light upon the so-called question of whether a date determines in each and every case the origin from which, or the place to which, a tablet should be reckoned. This tablet (No. 1) as well as that published sub No. 15 (comp. l. 21:E-ki = Babylon) are both dated and written in *Babylon*, but were *found* and rightly belong to *Nippur*, because Bêl-nâdin-shumu, son of Murashû, lived and transacted business in Nippur. Suppose, we would have acquired, say by purchase, only these last two tablets, and would have asked the thievish Arab where he found them, he answering us "in Nippur," and suppose also that the house of Murashû would have been known to us only from these two tablets, what would we say, if we found, after having read these tablets, that they were dated and written in Babylon? Well, we would say, that the Arab must have lied, he *never* could have found those tablets in Nippur, because the date to be found on these tablets clearly states that they come from and were written in Babylon! And yet—how foolish such an inference! A date does not always determine the place from which a certain tablet might emanate nor must the information gotten from a thievish Arab be always wrong when it comes to the question of the place whence a certain tablet hails.

4. Having seen that "the forty-first year" of Artaxerxes is the same as the year "of the beginning of the reign of Darius" it is natural to expect that scribes should call that year either by one or the other, or possibly by both names (No. 4, 28; No. 5, 1.2; No. 6, 2.3; No. 7, 3.6). If this be so, then there is a discrepancy between IX, 109 and X, 1, i. e., IX, 109 must be reckoned with Clay as belonging to Artaxerxes II.

5. As C. B. M. 5310 is dated on the third of Shebat and X, 1 on the

fourth of the same month, it is more than probable that Artaxerxes died on the third of Shebat. The news of the death of the king must have reached Nippur and the firm Murashû Sons quickly, for already on the fourth of Shebat we find Bêl-nâdin-shumu in Babylon renting a house to witness probably both the burial of Artaxerxes I and the coronation procession of Darius II. Immediately after the latter event we find Bêl-nâdin-shumu again in Nippur transacting business on the second of Nisan, i. e., we find him in Nippur within *one day*. From this it follows that communications between Babylon and Nippur did not take longer than *one day*: the news of the death of Artaxerxes reached Nippur on the same (or the following) day the king died, for on the fourth of Shebat Bêl-nâdin-shumu is in Babylon, on the first of Nisan the a-tsi-e sharri took place—Bêl-nâdin-shumu being still in Babylon—but on the second of Nisan the representative of the house of Murashû is again in Nippur doing business in his customary way.

As was already mentioned above, Professor Clay translated 13 numbers of the texts he published. His translations, however, are not what we would expect. I shall mention here only a few of his mistakes:

i-nam-din-na-a', No. 54, 9 (p. 21), he translates: "I am given possession of." But *i-nam-din-na-a'* is 3. p. *fem.* pl., hence we also have to read *bûrâti* for *bûrê* in l. 8, and have to translate: "from the day when those fish ponds for fishing are given." A similar mistake is made by Clay in No. 131, 9 (p. 24), where *mu-un-na-a'* is again 3. p. fem. pl. Hence translate: "for every hundred sheep ten dead (= fem.!) shall be reckoned." 54, 13 (p. 22): the *u* cannot be translated by "and," which had to be "-ma," comp. l. 8. The same holds good of No. 29, 11 (p. 28). Page 22, Annotations, read: No. 1 (or No. 2), l. 4. Page 23, Annotations, read: No. 131 (or No. 3), l. 3. CXLIV- Also *ibid.*, l. 3, read CXLIV, No. 131, 3. 12 for *lach-ri* read *lach-rat* and comp. No. 106, 1 with l. 3. No. 131, 8. 17 for *du-na-tum* read *kin-na-tum* and translate: "for one bearing sheep one lamb." The root of *kinnatu* is *kûn* and not *kanû* (Del. H. W. B., 338b). Comp. also goddess Ai as *(ilu) GANAM* (= *lachru*) is the goddess *sha ku-ni-e*. The plural of *kin-na-tum* is *ki-na-ta-ti*, or *ki-na-at-ta-ti*. For the length of a vowel expressed by the duplication of the next consonant comp. also *mash-kan-nu*, Nos. 20, 9; 57, 6; *(amêlu) mash-kan-nu*: No. 83, 4. 5. *(amêlu) paq-qa-ad-du*, No. 89, 6. After *C im-mir-tum* in No. 131, 8 there ought to be added *a-lit-tum* as the margin gives it, comp. No. 130, 8. For *rabîti* read *rabîti(ti)*: No. 131, 13. *Unîqu* ought to be transcribed throughout this text, instead of *uniku*. Page 24, note, l. 10, read: Vol. IX, 1: 14. 24; l. 16 read: 10. 18; l. 19 read: 74 for 78. Page 26, No. 106, 7 read *napchar napchari* for *napcharu*. Page 27, No. 99, 3, read: *Tsi-cha-'* for *Si;* ll. 6 and 8 read: (qa) for qa; l. 7 read: *Arachshamna* for *Kislîmu;* l. 9 read: *pa-qa-ru* for *-ri*, and *Chi-'-du-ri-'* for *Chi-'du-ri-'*. It seems to me that Clay has missed the meaning of No. 29 (p. 28) entirely. The right understanding of that tablet depends on the correct interpretation of *SHAG-EN*, which Clay transcribes according to lines 7, 12 by *eburu*, and of *a-na e-si-ri....i-si-ir-ri....la i-te-si-ir....*and *im-mir-iq-qu-u*. However, space prevents me from entering into details here. Strange also are the different translations which Clay makes of the word *a-cha-a-tu*: "profit," No. 55, 11 (p. 28); "in common," No. 44, 5 (p. 29); "shall be divided *equally* among them," No. 44, 8 (p. 29). The signification "side" = "portion, share,"

suffices in all places quoted. Page 29, No. 44, 1, add *sha* before *a-na* (therefore *iq-bu-u* = relative!) and translate accordingly. "Who spoke.". On p. 30, (No. 9) notice the different transcriptions: *alpe-coll-pl.* in lines 6, (after *-ka* add here 7.!) and 13, and *aplu-coll-pl* in line 3. Why is *(A-AN)* always added after *a'*, seeing that the pronunciation of *a'* = *A-AN* is *ma*? Before *Dini* in line 18 add *[a]-na;* line 19 add *u* after *na-ash-par-ti-shu.* Page 34 No. 94, 6, 7, read *aplu sha* for *shu.* Page 35, No. 59, 11 read *u-sha-az-za-zu* for *u-sha-az-az-zu.*

In the concordance of proper names I would like to suggest the following additions and corrections (excluding the on some places inconsistent transcription):

To *A-du-me-e* (p. 38) comp. now the name *(ilu)Su-kur-ru-im-gig-ghu,* quoted above, which shows that *ûme* = storm! Also *Achu* in such words as *Achu-li-'*, *Achu-nu-ur-'*, etc., must represent a divinity. In another place I shall show that Achu was =Irrish(t), (originally Nin-Girsu as brother of Enzu) later identified with Nergal. Nergal again was differentiated into the twin(!) brothers Lugal-gir-ra and Shit-lam-ta-ud-du-a, hence also Achê (for Achu) may appear. Only in this way the names *Ach-a-bu-u* = "Ach is (my) father" and *I-la-i-a-bi,* i. e., "the two gods, the twins, the *(ilu) mash-tab-ba* or *(ilu) ki-lal-la-an* (III R 68 No. 2, 68. 69a. b) are (my) father," can be explained.

Further we may say that also the shorter forms *CHI* (comp. *(ilu)CHI-CHI* = Irrish and (ilu)CHI = Anshar = Lachmu = *lechem,* "which" falls down from heaven and *smites* the enemies = Enlil, the god of the storm) and CHU (= the storm-bird: Im-gig-ghu!) can only be explained if Achu was indeed = Irrish(t). With *Achu-ti-'* comp. *Ban-na-Di-'-u, Bana* is a god like *Achu,* hence *ti-'* = *Di-'-u.* With this latter god compare again the god *Du-u Du, Du-i, Tu-u-i* mentioned by Hilprecht, p. 48, note 11. If *Achu* be = *Irrish(t),* then *Ba-na,* i. e., *Ti-'u*(!) or Di-'u-u = Du or Du-u etc., must be likewise = Irrish(t). The feminine counterpart of Ba-na is Banîtu. With *Achu-u-me-e-shu* = Ach (and) his storm comp. the old Arabic *Haubas we Almaquhu,* i. e., Haubas and his (chief) destroyer. To page 39, b, 9, add: 25, 2, brother of (1) *Ach-iddina,* (1) *Zab-di-ia* and of (1) *(ilu) Nabû-rê'u-sh-nu* and correct sub respective names accordingly. Page 39. b. 14. read 77:147. With *Ba-nu-nu* (p. 41) (= *Ban* + *u-nu*) comp. *Achu-u-na-a* and the name *Achu-nu.* Page 42a *Ba-zu-zu* add: *(amêlu) shak-nu sha(amêlu) ma-chi-tsi-e sha shumêli,* son of *Bêl-bullit-su (amêlu) ardu sha* (1) *Ar-tach-sha-ri.* Page 42a Bêl-abu-utsur add: *(amêlu) shak-nu sha (amêlu) Shu-mu-ut-ku-na-a-a,* son of (1 *ilu*)*EN* (= Bêl)-*êtir* 115: 11(13!). Page 43a: *Bêl-bul-lit-su,* 1: the *u* in *gardu* is long, *shi-pi-ri* is written here. Page 44a: *Bêl-it-tan-nu* add: son of (1 *ilu*)*EN-LIL-iddina,* 27, 3 and add sub latter name.

Is *Bi-bi* in *Bi-bi-ibni* (p. 47b) also the name of a god? If so, then compare *Bi-ba-a* with *Mar-duk-a; Bi-ba-nu* with *Achu-nu* and *Ba-nu-nu.* With *Dad-di-'* or *Tad-di-'* (p. 47b) comp. *Ba-na-Di-'-u,* hence: *Dad* = *Di-'.* As there is a god *Dan-nu* we may translate the name *Dan-nu-Nergal* by *Dannu* is *Nergal,* and *Danna-a* (p. 48a) would be a formation like *Mar-duk-a.* To *Dajan-nâdin* (p. 48a) add *(amêlu) shak-nu sha bît (amêlu) shak-nu-u-tu.* If the name Dannu-Nergal be = Dannu is Nergal, then Cha-da-an-na (p.

50a) may be translated either by *Chad (= Adad)* is *AN-na (Anu)* or *Chad* is = *Danna*, i. e., Adad = Nergal, both explanations are possible and justified. Page 51b add the writing (1) *Ja-am-ma-'* 72:3. To *Nachish-tâbu* and *Nachishtum* (p. 57) comp. also Biblical *nchsht'*, the mother of King Jehoiachin (2 Kings xxiv. 8). *Nachish* and his wife are no doubt the gods of *plenty* = (ilu) IM or Irrish(t), Nin-Girsu. Page 60a, 9 above read *shu-sha-nu-pl.* Page 63b add also the writing (1) *Shu-lum-DIN-TIR-ki* (= *Bâbili*) 67,5; 91,8.

To the names of places belong among others, no doubt, also *Bît-Ka-lak-ku-a-tu*, 4:15, comp. *Bâb-ka-lak-ku*. Here it would have been of great help to students if Clay had also registered all names beginning with Bit, as e. g. *Bît- (amêlu) shak-nu-u-tu*, 6:9; *Bît-* (1) *Cha-ma-ta-a-a* (see this latter name) and many others as 7:1; 35:8; 51:10; 102:4.9 (horse stable); 18:5; 10:5.7; 15:4.6; 4:15 etc., etc. To *Bît-Chanana'* add the reference 127,4 and also the title *char-ba-tum sha (amêlu) ga-ar-du sha sharri.* The *Bît-* (1) *Chi-ig-la-'* occurs 71:5; *Bît-*(1) *Ig-la-'* 125:6; 62:5.7; and *Bît-* (1) *Ig-chi-la-'* 125:9 (omit marginal note to *chi*!) Notice the position of *chi*! It may stand either before or after *ig*, or may be left out altogether. *Chi-ig-la-'* might also be read *Che-gal-la-'*, if so, it would be the same name as *Nachish(tum)*, meaning "abundance," "plenty." Should we have to separate this from *Ig-la-'* = *Ig-chi-la-'* (125:6=9)? To *Bît-Zabini* add: 13:6.7. Might we not read in 11.4, 3: *sha(ilu)Bâbu* (for Marduk, p. 69a, l. 1) *-êrish* and identify it with 31:5.8 etc.? It also would have been advisable to mark all those places where *alu* is found as determinative and where it has been omitted, e. g. *Larak-ki* is written without *alu* on all places (read here 37:7!) with the exception of 88:7. Clay mentions among the names of places also one, viz., *Kab-ri(tal)-li-ri-im-me-shi, Kab-ri(tal)-li-ri-im-mu-shi.* This transcription shows clearly that Clay did not understand this tablet! I wonder what he would make out of No. 96 with such a reading as *Kab-ri(tal)-li-ri-im-me-shi*! No, Professor Clay, that will not do. Separate the *me* into *sha ina* and read the *shi* = *pâni*, and you will make good sense out of this tablet! If we thus separate *me-shi* = *sha ina pâni* from the name we get *Kab-ri(tal)-li-ri-im*, which again occurs in 98:6.10 as *Kab-ri(tal)-li-ri-im-mu*—hence I fail to discover a *shi* behind *mu*! Where did Professor Clay get that *shi* from? In 31,7 is the latter part of the name of a river still visible: *Kishâd* [*nâru*] (1) *Mu-du (= kin)?* Omit (m. omitted) after Balâtu (p. 69a, canals), for on both places the (1) is found. The *(nâru) UD-KIB-NUN-ki* 5:4 (here perhaps *na* better than *ki*!); 88:6 (in both places without Enlil-ki!) has not been registered.

The names of deities might have been enlarged if Clay had also registered the different names mentioned by Hilprecht in his notes to the Proper Names.

The names of the Aramaic Endorsements are especially interesting but need a little more "working up," especially with regard to the question: "When is the preformative *u* or *i* of the third person singular represented by an Aleph and when not?" Comp. e. g.:

a. Forms with Aleph:
   Bêl-êtir, Bêl-êrib, Bêl-iddina, Irrishtu-iddin, Irrishtu-UBALLIT, Ur[illegible]-iddina, Uru-êtir, Bêl-UTSUR-shu.

b. Forms without Aleph:
   Uru-upalchchir, Irrishtu-UBALLIT, Bêl-abu-UTSUR.

c. Forms without preformative mu:

Bêl-mukin-aplu.

In the "List of Signs" I missed among the many "variants" to the signs already given also those of "ardu" 6:6; "tad" 97:11; "kar" 4:16.17; "shak" 6 L. E.; "dan, rib" 9:11; 36:7. One sign is not registered at all, viz., 4:7: BI+ISH+SHA-mesh = SHIM+inserted sha, Br. 5205/6. Also all syllabic values and compositions of quite a good many signs are not given.

While transcribing the texts I accidentally noticed still the following errata in addition to those already corrected by Clay:

No. 2, 4 read: Cf. 3,4 instead of 2,4. *Sha* on the margin of 7,1 has been misplaced. 9,11 and 36,7, third sign intended for *dan* and *rib* looks like *bîtu*. 9,20, third sign looks like *nu*, instead of *u*. 19,1.6 we have 3 PI, but l. 11 gives only 1 PI. In 22,4: *eqli-shu* and l. 5 *(gish)BAN-shu* is the *nu* left out for *shu* = *shunu* refers back to *Bibâ* and *Bêl-it-tan-nu*, l. 2. Was it left out by the scribe? (Such singulars for plurals occur, however, oftener, e. g., *82,12, i-nam-din* for intended *i-nam-din-u'*. Compare also the plural form *iqbu-u* for the intended singular *iqbi*: 9,5.) Did the scribe leave out also the *sha* in *bît (gish) BAN-shu* [*sha*] *kishâd*, 24,6? Comp. 26,9 *et passim*. 32,9 read *sha ina alu* for *sha alu*, comp. 46,10. 51,15: read 15 for 5. In 52,13 is the reference sign after *chi* =' omitted. 55,7 correct the marginal note to: Omit, mistake of scribe for *a'*; comp. transcription in introduction, p. 28. Is there no *u* between *Bêl-kâtsir* and *Qunna* in 59,14? Comp. l. 9. In 76,10: *u-sha-az-za-az-za-az-ma* we have, no doubt, a dittography for *u-sha-az-za-az-ma*. 80,11 read *sha bît sharri sha* for *sha bît sha*. Noteworthy is the expression *SHE-BAR-a' 200 GUR SHE-BAR* in 82,7 for the more common *SHE-BAR-a' 200 GUR*. 84,5 is *sha* probably left out after *ardu*. 92,1 is *dan-nu* omitted after *karpatu*, comp. l. 9. 92,10 read 4(+)½ (=6 qa) PI for 4(+)½, comp. l. 2. 103,4 read *sha kishâd nâru* for *sha nâru*. 107,1 read *u ina alu* for *u alu;* 111,1 is *u* after *qa-lu* broken away. Omit the marginal note to *chi* in 125,9.

Many other important facts might be enumerated here, facts important not only for grammar, as e. g., the use of *ina* for *ana*, 22:6; 39:9; 46:15; 97:5 *(ina)*, 11 *(ana)*; 40:8 (*ina* and *ana* together!); the writing *a-di-i*, 22:7; 5:6; 41:10; 52:9; 57:8; 95:5; 101:15; or the *SHE-BAR ga-mir-tum*, 123:3, showing that SHE-BAR is feminine; the *(amêlu) na-ash-pir-tum-ia*, 9:7; *li-mi-tum-ti-shu*, 9:20; *tsi-e-nu-ia*, 9:3; *i-shal-tu*, 39:9; 40:8; *ka-a-ma*, 52:3 (= *kiam*) *i-bi-in-nam-na-an-shu*, 53:8, etc., etc.; but also for lexicon: *nash-kan-nu*, 20:9; 57:6; 83:4,5; *ri-shu-us-su*, 46:16; (for *râshu-ussu*), *sha-nim-ma*, 45:11; 47:13; 48:11; 49:10; 125:10; *kin-na-tu*, 130, 131, 132 *et passim*, *shi-pi-ish-tum* 5:6 etc., etc.

May these notes convince Professor Clay of the fact that his book has been greatly appreciated, but may they also be an indication of how he may still improve upon his investigations—for he has still to learn and cannot as yet be termed a "master" in Assyriology. HUGO RADAU.

PERSIA PAST AND PRESENT. A Book of Travel and Research. By *A. V. Williams Jackson*. New York: Macmillan, 1906. Pp. 467. Price, $4.00.

We take pleasure in announcing to our readers the appearance of this new and interesting book on Persia, by Prof. A. V. Williams Jackson, professor

of Indo-Iranian languages in Columbia University. The book is written in a fresh and vigorous style and relates the impressions of the journey as well as gives an interesting and instructive account of cities and monuments which this prominent Zendavesta scholar visited, thus combining popularity with scholarship.

Professor Jackson describes the route to the Land of the Lion and the Sun through Tiflis, Erivan and Mount Ararat, and the road to the Persian frontier. He sketches the history of Persia and points out our interest in the country. He journeyed through snow from Aras to Tabriz, the residence of the Crown Prince of Persia. He devotes a whole chapter to Zoroaster and the Avesta, describes his trip on camel and horse back around Lake Urumiah, the supposed early home of Zoroaster. He reaches Takht-I Suleiman, an ancient fortified town in ruins, then describes Hamadan, the ancient Ecbatana.

After devoting two chapters to the Great Behistan Rock and the cuneiform records of King Darius, he describes Tak-I Bostan and Kermanshah, and the great ruined temple of the Persian Diana at Kangavar. From Hamadan he visited the ruined temple near Isfahan, the former capital of Persia.

Of special interest is the description of the tomb of Cyrus the Great. Thence he traveled to Persepolis and tells of its ancient monuments and Shiraz, the home of the Persian poets. At Yezd there are still Zoroastrians living whose religion and religious customs are older than the modern capital of Persia. Teheran is reached and the ruins of Rei, the ancient Ragha, are inspected. The journey through Persia ends with a trip through Mazandaran to the Caspian Sea.

The book is profusely illustrated with photographs, charts and reproductions of ancient monuments.

SPINOZA AND RELIGION. A Study of Spinoza's Metaphysics and of his particular utterances in regard to religion, with a view to determining the significance of his thoughts for religion and incidentally his personal attitude toward it. By *Elmer Ellsworth Powell, Ph. D.* Chicago: The Open Court Publishing Co., 1906. Price, $1.50.

Professor Powell of Miami University after giving careful study to all the details of Spinoza's system of philosophy feels fully justified in agreeing with that German translator of the philosopher's works who claims that there is no other system in the whole history of human thought which is more difficult to understand and explain. This very special difficulty Professor Powell lays largely to the conditions of Spinoza's own environment and the age in which he lived when views that differed from the accepted orthodoxy were received with contempt and persecution. But though personal timidity and considerations of expediency were not wanting in the motives that actuated Spinoza "sometimes to conceal and sometimes to veil his real opinions, and occasionally even to express views diametrically opposed to his own," it is probably also true that he hoped to disseminate his doctrines more widely by expressing his thought in terms which were popularly associated with the prevalent religious conceptions.

After a biographical chapter, the *raison d'être* of the present book is made manifest in the second chapter of the "Introduction" which treats of "The Diversity of opinions in Regard to Spinoza's Relation to Religion." Here Mr.

Powell quotes the judgment of some twenty critics, more or less, who may be divided into many contradictory camps. This divergence in the expression of opinion, he says, is due in some cases to a superficial reading of Spinoza by which his doctrines are accepted unquestioningly on their face value and his terms interpreted according to the meaning the reader was accustomed to associate with them; in other cases to a lack of candor on the part of critics who seemed to think that to classify Spinoza's philosophy plainly as atheistic would be interpreted as a disloyal defamation of his character; and in still other instances to the fact that "many expressions which imply opposite views of Spinoza's attitude toward religion represent at bottom different opinions, not in regard to Spinoza's teaching, but in regard to what constitutes religion on the one hand and atheism on the other." But of the diametrically opposite verdicts, Mr. Powell says that "in calling him an atheist, —if he used the term in its real sense as implying simply an anti-religious theory of the world, with no reflections on personal character,—Velthuysen gave to Spinoza a title to which, in a less intolerant age, he himself would not have objected. Of the title 'God-intoxicated philosopher,' he would certainly have been ashamed."

Following a chapter on "Spinoza's Doctrine of Knowledge," Part I is devoted to a detailed study of "Spinoza's Conception of God," discussing his definition of Substance (God), its formal and real attributes and their contents, and closing with the relation of his conception of the Absolute to the religious consciousness.

Part II, "Particular Doctrines and Expressions supposed to imply Religious Views and Interest," is a critical examination of those conceptions which have often been mistaken for expressions of religious mysticism, for the sake of showing more clearly the relation of Spinoza's ethics to the ethics of religion. These "particular doctrines and expressions" are "The Intellectual Love of God," "Immortality," "Church and State," and also his treatment of the conceptions of miracles, revelation, sin, salvation, etc.

In a short "Conclusion" Mr. Powell sums up as follows the results of his presentation of the relation of Spinoza's teachings to religion:

"The right name for Spinoza's philosophy is Atheistic Monism. It represents a world-view which, in its essential features, is the very antithesis of that required by the religious consciousness. Particular utterances of Spinoza's which, taken by themselves, seem obviously to express religious conceptions and religious feeling, evaporate under critical examination into mere phraseology; a part of which may be made intelligible by translating it into terms of his atheistic philosophy, while a residuum remains unintelligible, although it is accounted for by his demonstrable purpose of sometimes accommodating his language to the religious views of the time.

"Personally Spinoza had no religious interest properly so called, but only a scientific interest in religion; which is something quite different. In fact, it is hardly too much to say that the only interest he had in anything was scientific, philosophical. He made religion the object of reflection, not because it lay near his heart, but because the peculiar circumstances of his life thrust the subject in the way of his active intellect."

Professor Powell's treatment of this difficult subject is frank and scholarly. He believes that the fairest presentation of a thinker's views is the one

that expresses them the most clearly with all their necessary implications, rather than one that would attempt to classify the system under some popularly acceptable designation. He quotes continually from Spinoza's own words, and always gives the exact reference to the passage quoted in order that contexts may be consulted and translations verified, and in equivocal cases furnishes in a footnote the original expression in Latin, or Dutch where the Latin is not extant. The book will certainly be a great benefit to all who begin to make the acquaintance of Spinoza through his somewhat confusing writings, and to those whose patience is tried by the conflicting opinions of his many critics. In its fairness and direct treatment it will be welcome also to the experienced student of this somewhat troublesome philosopher whom Pierre Bayle has styled "the greatest atheist that ever lived."

THE DIVINE NAME IN EXODUS, III, 14. By *William R. Arnold.* Reprinted from the *Journal of Biblical Literature,* 1905.

The passage which is the subject of this article reads: "And God said unto Moses, I AM THAT I AM: and he said, Thus shalt thou say unto the children of Israel, I AM has sent me unto you. And God said moreover unto Moses, Thus shalt thou say unto the children of Israel, The Lord God of your fathers, the God of Abraham, the God of Isaac, and the God of Jacob, hath sent me unto you; this is my name forever, and this is my memorial unto all generations."

The problem consists in this, that Yahveh here reveals his name to Moses, and yet he does not use the name "Yahveh," but the word *'Ehyeh* which is translated in our version by "I am." Professor Arnold claims, not without a good support of argument, that this should not be translated "I am," but must be regarded as a name, which is simply a substitute for the word Yahveh, and replaced the latter at a time when the name was deemed so holy that it was considered blasphemous to utter it even in reverence. Such substitutions were quite common, and the substitution *'Ehyeh* which literally means "I shall be," is one of them.

The preceding passage, "I am that I am," should according to Professor Arnold be cut out as a later gloss which crept in the text and had originally been written as a marginal note to explain the name *'Ehyeh,* "I shall be," incorporating the redactor's interpretation of this new and uncommon appellative of God.

Professor Arnold further insists that the idea of eternity is not in the mind of the author, in either the original passage or the added gloss, for such an abstract conception of God as representing "existence," or even "eternal existence" is absolutely foreign to the ancient Israelites. It is a modern idea and smacks more of Greek philosophy than of ancient Semitic religion. It might be Indian or modern but not Hebrew, and he explains the gloss to mean "I will be whatever I choose."

The name Yahveh, originally used exclusively by the Southern tribes only, is here for the first time introduced into the Elohim text. It is not used for the first time in the Old Testament, but it is new to the Elohist writer who now adopts it for the entire people as the name of the God of Israel. Therefore Yahveh is here identified with the God of Abraham, the God of Isaac, and the God of Jacob, and it is added "This [the name Yahveh] is my name forever,

and this my designation for generation after generation." But in spite of this inevitable requirement of the context, God calls himself not "Yahveh" but by the substitute "Ehyeh."

There can be no doubt that the original text must have read "Yahveh" in the place of *'Ehyeh*, and the substitution can only have taken place at the time when the name Yahveh was no longer pronounced.

But why this uncommon substitute in this important passage?

In most passages the four letters (YHVH) were pronounced Adonaj or Lord, and accordingly receive the vowels of Adonaj (ă ō a) thus producing the word Jĕhovah, but in our passage the substitution "Lord"' is obviously out of place and so another substitution had to be made.

Professor Arnold argues that the date of the present reading can not have been before the end of the fourth century, and not later than the end or the middle of the third century B. C. Accordingly the reading *'Ehyeh* for Yahveh was substituted between 300 and 500 B. C .

The essay contains almost sixty pages, and is painstaking as well as thorough, and also convincing. We are inclined to believe that Professor Arnold has spoken the last word concerning this much mooted passage. P. C.

L'ANNÉE PSYCHOLOGIQUE. Publiée par *Alfred Binet.* 12me année. Paris: Masson, 1906. Pp. 672.

This year of M. Binet's publication is a very interesting and valuable contribution to the literature of psychology. Each of the contributors might well claim our attention in a special review, but we will confine ourselves to a more particular mention of the last of the original essays, which is Professor Mach's résumé of his views on the relation of physics and psychology ("Rapports de la physique avec la psychologie"). He introduces himself as "neither a philosopher nor psychologist, but simply a physicist," whose interest in psychology lies chiefly in the part of that science which is of importance to physicists, viz., the physiology of sensation, and arises from questions relating to the theory of consciousness and methodology. To make clear his philosophical point of view he sums up the sequence of his personal studies which contributed in determining it. First comes the strong influence of Kant in his Prolegomena, then Berkeley, then Hume. His study in physics and its history taught him that science has for its true end the discovery of the relations of dependence between the data of sense-perceptions, and that the concepts and theories of physics only constitute one simple means, realizing an economy of thought, toward the attainment of his end. Then he abandoned all metaphysical interpretation of physics, considering the psychic life in general and scientific work in particular as an aspect of organic life.

Mach maintains that the ideal of science should be to grasp with as great economy of thought as possible and on the basis of exact investigation, the mutual dependence of the internal and external experiences of man. With characteristic modesty he claims exclusive right to none of the ideas expressed in this essay, but believes that in the conciliation of these ideas one result may be seen of the general development of civilization.

ZARATHUSHTRA, PHILO, THE ACHAEMENIDS AND ISRAEL. By *Lawrence H. Mills.* Chicago: The Open Court Publishing Co., 1906. Pp. 460.

The present book contains the results of the author's life-long study of the Zendavesta, and for the first time sets in a clearer light the relation of Zoroaster to our own religion. It is a treatise on the antiquity and influence of the Avesta, and points out in detail Zoroaster's relation to the Greeks, the Achæmenian kings of Persia and of Israel. He dwells especially on Philo and proves the important part which the Zendavesta has played in the development of Western thought. We expect to discuss this book at further length in a forthcoming number, and will at present only announce its appearance and call attention to the paramount importance of the Zendavesta religion in the development of human civilization.

TRAITÉ DE PHYSIQUE. Ouvrage traduit sur les éditions russe et allemande par *E. Davaux*. Paris: Hermann, 1906. Tome I, fas. 2, pp. 409-559, Price 6 francs; tome II, fas. 2, pp. 203-431, Price 10 francs.

We take pleasure in announcing these additional parts to the first and second volumes of Professor Chwolson's comprehensive work on physics, mentioned in the last number of *The Monist*, which have lately appeared from the scientific publishing house of Hermann. This supplement to the first volume treats of "The gaseous state of bodies," in chapters on the density and tension of gases; their motion, dissociation, and contact with other bodies; barometers and pneumatic machines and the kinetic theory of gases. The additional portion of the second volume continues the discussion of "Radiant Energy," treating the index of refraction, the transformations of radiant energy and its dispersion, including notes on spectrum analysis.

Mr. Charles S. Peirce wishes the following corrections to be understood in his article "Prolegomena to an Apology for Pragmaticism," in *The Monist* of October, 1906:

Page 494, line 13 from bottom: for "f_1" read f_0.

Page 497, before the second line from the bottom insert: "so stands. This is another expression."

Page 498, line 4: After "here," insert, regarded. Line 13: Delete ", so stands."

Page 531, line 3 from bottom: For "Plate," read, Place.

Page 532, line 7: For "individuality," read, individual.

Page 536, line 16: Transpose "is the Area of a Cut whose Place," so as to bring these eight words after "else" in the next line.

Page 536, line 11 from bottom: For "Inner Scroll," read, "Inner Close."

Page 538, Figures 9 and 11: Make heavy the line joining "adores" to "woman."

ADVERTISEMENT.

Readers of *The Monist* who have in their possession a copy of Vol. VIII, No. 1 (October 1897) which they are willing to spare, would confer a favor by communicating with us, so that we may make arrangements for securing a few copies which are lacking in our files. Address The Open Court Publishing Company, 1322 Wabash Avenue, Chicago, Ill.

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THE MONIST

CHRISTIAN SCIENCE: MEDIEVALISM REDIVIVUS.

DR. John S. Billings, U.S. Army, reviewing the progress of medicine during the nineteenth century, has shown that deaths of women from childbirth decreased during that period from 10 to 20 in 1000 to 5 in 1000; and that from all causes the deaths in New York City fell from between 35 and 40 in 1000 to less than 20 in 1000. He recalls the fact that one hundred years ago yellow fever was epidemic in New York and Philadelphia for two years; (for thirty years the disease has been almost unknown throughout the whole country;) also that in 1800 the majority of persons one met were pitted with smallpox—the survivors of a much greater number,—while now there are physicians who have never seen a case of smallpox; and that in the Napoleonic and Revolutionary wars more died from disease than from wounds, while now hospital gangrene is unknown.

Statistics show that in Chicago during the last thirty-five years the average age at death has increased from 12 to 32 years.

No one disputes these facts, or attributes them to any cause other than medical science—the measures employed partly in curing disease, but more especially in preventing its introduction, or its spread when once introduced.

Yet, notwithstanding these facts, Christian Science

has the effrontery to say that "The world is exceedingly tired of the medical profession—a profession as changeable as the skies,"—and it offers itself to suffering humanity instead, as something not only unchangeable but divine—unchangeable because divine.

St. Augustine in the fourth century declared, that "All diseases of Christians are to be ascribed to demons; chiefly do they torment fresh-baptized Christians, yea even the guiltless new-born infants."

It is a long reach of time from St. Augustine to Mrs Eddy, and during that interval it has been supposed that knowledge of the human system had made some progress. Yet perhaps we have been laboring under a great mistake after all, for we find that between the old saint and the woman of Concord there is not much difference either in belief or practice. The terms do not exactly coincide, but the ideas are almost identical. Both have denied that disease is disease, both have relied on supernatural means for relief, both have scorned natural means as not only ineffective but impious.

But how has this new system, which appears to be nothing but a reversion to primitive methods, or a reinvestiture and restatement of outgrown beliefs, been able to gain a hearing and a considerable following? Prof. David Starr Jordan indirectly answers the question when, in another connection, he says:

"The sole condition under which communistic and socialistic organizations have been successful is that of complete subordination of the individual wills to the the will of some one individual supposed to have mystic power or a divine mission."

The answer is also found in the very systematic methods of advertisement and organization employed in the propaganda.

THE ADVERTISEMENT.

About ten years ago Mary Baker G. Eddy published a book entitled *Press and Pulpit,* a compilation consisting partly of reports of lectures and addresses on the subject of Christian Science, but chiefly of extracts from various newspapers, ostensibly giving the views of editors on the same subject. That part of the book which is accredited to the pulpit, however, consists merely of the views of Mrs. Eddy's First Readers and reverend lecturers, some of whom were ministers in other denominations before they embraced "Science." Naturally it would be expected that their words would be commendatory, and since the extracts from the newspapers were selected by Mrs. Eddy herself, they also, as a matter of course, are such as speak well of her and her church; it would be most surprising if she had published any other kind. Mr. Septimus J. Hanna, her historian, confidently asserts of the whole collection, that "They accord fair and sincere recognition of her achievements and her rightful place in history." But who wrote them?

Press notices are always liable to the suspicion that they are either inspired or written wholly by parties in interest. In the case of concert singers and composers of popular music, for example, those who have had experience in their exploitation know how easy it is to procure encomiums for their artists by the hundred. Even those not conversant with these tactics, the ones it is desired to influence to become patrons, have become a trifle skeptical as to the reliability of the fulsome praise which the newspapers print, and they generally require something more undeniably spontaneous and sincere before giving up their money.

If it is a show or a play, it is patent to nearly everybody that the press notice is a part of the regular advertisement

which the advance agent prepares and places. He is hired to do that particular work. He may quote from other papers, but he also wrote the words he quotes.

Press and Pulpit having passed through seven or more editions, it is evident that its compiler and editor must regard it as of considerable value and importance; and if it is intended to serve the same purpose for her which the bill boards do for the circus, no one need complain; the field is open, and she has the same right to "keep everlastingly at it" as the shows have. If it is expected, however, that men at large will take it as real, unbiased testimony, then that presupposes an innocency on their part as great as that of the children and farmers (unfortunately sometimes found too), for every page points to a Christian Science writer. The skill shown, however, in the manipulation of the press is quite remarkable. So cleverly has it been done that the articles which have been gathered together in *Press and Pulpit* appeared in the first place, not as interested puffs, nor like the palpable work of the advance agent, nor even (as they ought to have been printed) as signed letters, but as if they were the very editorials Mr. Hanna would have us believe them to be. Unsuspecting readers at the time no doubt took them to be such, and even in the book it is only by the frequent cropping out of the familiar cant phrases of Christian Science that the real authorship stands revealed.*

The charlatans and quacks are given to straightforward lying. Christian Science is more discreet—perhaps I ought to say conscientious,—and yet *Press and Pulpit* being something else than what it pretends to be, by what soft words shall we characterize it?

* Nothing more than this evidence which they bear upon their face needed to confirm the view that they were all written by Christian Scientists but I have additional corroboration of it from some of the editors who have permitted their columns to be used by those writers.

PUBLICATION COMMITTEE.

As a supplementary force in the advertisement, there is an organized body of men and women scattered over the country known as the Publication Committee whose duty it is to keep a sharp lookout for newspaper and magazine articles which show "lapses" toward Mrs. Eddy, and when found to answer them—"in a Christian spirit."

The menageries sometimes cause exciting accounts to be published, of how a lion escaped from his cage and broke the bones and tore the flesh of the other animals. The fierce attacks of men on that gentle creature known as Christian Science do really occur, but in answering them the Publication Committee do not fail to utilize the occasion to the full by calling attention at the same time to the fascinating, wonderful and truly pious character of their system. In fact, they do not need to be attacked—any allusion to the subject will be found sufficient to draw them out, such opportunities if properly handled being quite as effective, in their judgment, as the more direct appeal of the alleged editorial.

LECTURES.

Through its Board of Lectureship the system is explained to the public in a manner calculated to attract the attention of the more intelligent class, by setting it forth in such a light as to require as little of one's credulity as possible and yet be consistent; appealing to the religiously disposed by frequent references to the words of Jesus and his disciples, and arguing throughout with a speciousness not excelled in politics, and seldom equaled in the practice of law.

"You may have read some of the testimonies as to cures, which possibly appeared to you extravagant. Very

well; we don't ask men and women of your intelligence to give them undue attention until you know something of our methods and resources. But come to our lectures and we will uncover to you something worthy of your most careful attention."

Imagine yourself, therefore, ushered into a comfortable seat in some good theatre on a Sunday afternoon, amongst an audience of well-bred men and women, breezy and cheery, with none of the sanctimonious air of the church congregation, yet very earnest; no hint of money—no "silver collection" at the door, nor passing of the plate;—— soft music from a piano down in the orchestra for five or ten minutes, and then the lecturer and his introducer—a local officer of the church— step upon the stage.

The introduction is a memorized recitation of a most carefully prepared prelude, evidently brought by the lecturer in his pocket, or forwarded in advance, for nothing is left to accident. The speaker, a graceful gentleman, beaming with kindness, almost apologetic when criticizing the profession of medicine, though obliged to smile at some of its amusing fallacies—particularly the theory as to germs;—with charity for all who, through misapprehension, have misrepresented Mrs. Eddy and her teachings; with an earnest wish that you should correctly understand this health-giving and satisfying revelation for your own greatest good, asking if you are satisfied with yourself now, —talks entertainingly, plausibly, for an hour and a half, holding the attention so closely that time is unnoticed, and the only sound—which you rather seem to feel than hear—is the deep-breathed approval of the believers among his auditors. And when it is over, if you are not convinced you almost wish you might be, so charming has it all seemed.

Those who make up the audience of one of these lectures are mostly persons of ordinary attainments only, hav-

ing been drawn thither by no particular interest, yet with no particular prejudice against the subject, because knowing little or nothing about it, many of them church members, they form an ideal assembly for the purpose aimed at.

And the first aim is to remove any doubts that may exist as to Christian Science's being antagonistic to Christianity, or anything else than Christian in all its essentials. It is shown, apparently, to be in fact a rediscovery of Christian first principles, and a return to a practice of them —a revitalization of a lot of Scriptural injunctions and promises which have for a long time been neglected,—which will appear at length as the only true and complete Christianity. How can that be more than a half-Christianity which confines itself to soul-saving only? This saves both soul and body. (It might be asked here, why a person need ever die then;—but that is a question our friends are not eager to have raised.)

The "little book," *Science and Health with Key to the Scriptures,* the Christian Science text-book, it is declared, sheds a flood of light upon the Scriptures, which not only makes them wholly reasonable, but as applicable to life now, physical and spiritual both, as to the times in which they were written. It is asked: "Is the great Healer dead, or is He the same yesterday, to-day and forever?" What is the meaning of the words (James v. 15), "The prayer of faith shall heal the sick"?

After showing how much ground there is to justify the use of the word *Christian,* and for regarding Christian Science as in reality applied Christianity, the lecturer proceeds to so handle the words *sin* and *disease* as to make them appear to be synonymous, and then leads up to a denial of what they stand for in human life. Evil, sin, disease—these can be used interchangeably at will, and are so used in all Christian Science literature as well as

in lectures. Their *unreality* is set forth by Rev. W. P. McKenzie, as follows:

"It is a distinctive feature of Christian Science that its postulate, rather should one say its axiom, is this: that by proving the unreality of sin, disease and death, you demonstrate the allness of good."

Mr. Hanna, in a lecture delivered in Parkersburg, W. Va., February 28, 1905, said: "Evil is unreal. Sin is real as a human belief, but not as a divine fact."

These statements are unique, if not wholly intelligible; but they make it plain that disease is, in their philosophy, not real. When, however, an outsider asserts that its reality is denied, he is immediately charged with misrepresentation.

Richard P. Varall, in a letter to the *New York Sun*, March 8, 1904, written for the purpose, as he states at the outset, of "correcting a very popular misapprehension that Christian Scientists do not believe in the reality of sin and disease in a literal sense," said: "No body of people recognize the seeming (!) existence of sin and disease more than do the Christian Scientists, and one of the best proofs of this lies in the fact that the sinful are regenerated and the sick healed by its means."

"The admission that 'God is All in All' logically contradicts the belief in the reality of evil. To be loyal subjects of an all-powerful God, we must not even in thought believe him capable of such imperfect work as that evidenced in the sick and sinful progeny of Adam. The only possible escape from this dilemma is to agree with Mrs. Eddy in her deduction, that spirit and matter being opposite, the latter must be unreal if the former is real... Those who have mastered its teachings (Christian Science's), even in a small degree, can prove in part to themselves and for others the unreality of sin and disease." Mr. Varall is a member of the Publication Committee.

This letter of explanation needs explaining. At a casual reading it appears to be well-nigh meaningless, but it is really a deft piece of sophism, for it contrives by identifying disease with evil to confirm the impression it ostensibly seeks to remove, and reaffirms the very statement it pretends to refute. And it will not be overlooked that this official denial of the reality of disease either goes too far or not far enough. If disease is not real, then what is it that the treatment cures? If the cures are veritable, then the disease must have been real. Something which is not cannot be removed, or else there was no removal. And what kind of a deduction is that of Mrs. Eddy's which he refers to, which makes spirit and matter "opposite," and *because* they are opposite therefore one must be unreal? If one is unreal how can it have relations?

It is charged that the opponents of Christian Science do not understand the subject, and when we come to points like these—the removal of something which did not exist, and the opposition of two elements, one only being real—we may as well admit that we do *not* understand it. More than that, it is not too much to say that nobody else understands it—it defies the world.

CURES.

More than most other Christians, these "scientists" regard their faith as amounting to knowledge—a knowledge which is demonstrable in the changed conditions of their bodies from a state of disease to a state of health; hence to intimate that they are the victims of illusions, or that they are guilty of exaggeration, is to raise an indignant protest; but there is much ground for suspecting the influence of both.

Ninety per cent. of those who acknowledge allegiance to Mrs. Eddy claim that they have been cured by "Science"

of physical ailments, which they are always ready to enumerate, prefacing generally by a statement made familiar by patent medicine advertisements—that he or she had been given up by all the doctors. And such wonderful cures as they relate! In reading the *Leaves of Healing*, published in Zion City, we may have thought the limit had been reached that would dare be asked of our belief as to cures. But if we did it was because we had not seen the *Christian Science Sentinel*. That paper every week prints from two to four pages of testimonials from grateful cured ones, which make the alleged work of all the other healers, by whatever name known, from the no-cure-no-pay men to Sanford and Dowie look small and tame.

In one issue alone of that paper (May 14, 1904) we read of a case of rheumatic gout being cured in forty-eight hours, a crushed heel and ankle restored to soundness in four days, a rib broken in the morning made whole before sun-down, "internal decay" arrested and cancer and consumption cured by reading some chapters in *Science and Health;* a person made able to fill a responsible position as bookkeeper and cashier without any previous training, and a case of *atheism* overcome without the slightest trouble—length of time not stated, but presumably short. One woman asserts that she had been operated on twice and had twenty-four physicians in three years. Christian Science cured her at once.

In the issue of Nov. 14, 1903 another woman says:

"I was operated on for a spatulated fibroid tumor, when it was revealed that the disease was cancer of the uterus, and not removable.

"In this condition I was in the care of physicians and nurses for two years, and at last realized that death was the ultimate. At this point, a Christian Science friend called to see me, but was told that no one was admitted, as I was dying.

"I was then suffering great agony, and all opiates failed to relieve me, although a nurse and physician were in constant attendance. My body was swollen to an enormous size, until further expansion seemed impossible, and septicæmia had set in.

"This condition was regarded as the approaching end. The third day there seemed no change until late in the afternoon, when I was seized with a most terrific pain and sensation of something ripping and tearing itself loose, when with one jerk, as it were, I realized that I was freed of the incubus that was dragging me down to the grave. I called to my attendant and daughter, declaring to them, that whether cancer or tumor it had passed from me. They thought I was suffering hallucinations and tried to quiet me, but I insisted that they remove it and send for my physician to come at once. When he arrived with another they were dumbfounded and said there was no account in *materia medica* of any similar experience, and attributed it to a freak of nature. The growth was pronounced a cancer, leaving behind no trace, for every fibre, and the throat, or main attachment, was complete. They carried it away with them and it was the subject of much discussion at the health office. (Sic!)

"They now held out no hope, for the verdict was death from hemorrhages. To me a miracle had been wrought, and I knew it was of God, yet I did not know I was being treated in Christian Science. In one week I was about the house and continued to improve. In three months I started on a trip across the continent alone, and was well in mind and body, even though the physical condition was not perfect to material sense. When told by my daughter that I had been treated in Christian Science, I accepted the statement and was satisfied."

Dr. Tomkins says: "The sick have been healed of every imaginable disease, including insanity; the blind have re-

ceived sight, the deaf their hearing; shortened limbs have been elongated, crooked spines have been straightened, and law after law of the human mind's bondage have been broken." Almost the only affliction *not* claimed to have been cured is decapitation, but that may be due to an oversight on the part of the relators.

If now we believe in the actuality of these extraordinary cures it becomes necessary to admit that they are *miracles*. And they are occasionally called by that name even by Mrs. Eddy herself, though there is a growing reluctance, evidently, to speak of them as such, probably through fear of prejudicing the cause.

EXAGGERATION.

Some are exaggerators by temperament. "All the geese are swans till we see the birds." Some are so from policy. I once knew a physician whose sore throats were all diphtheria, whose fevers were all typhoid, whose coughs were incipient consumption. He was very successful in his practice. In fact, *all* who had these serious complaints got well. A suspicion got abroad, however (set afoot by his jealous rivals, probably), that his diagnoses had not always been quite right.

It may seem unkind, perhaps, to suggest that our Christian Science practitioners have indulged in any hocus-pocus with their patients, stretching the truth a little to make the ailment appear greater than it was, that the triumph of the restoration to health might appear the more wonderful. But it is somewhat surprising to observe that those who have been cured appear to know so much about the nature of their complaints. One is tempted to ask How did they know they had "internal decay," crushed heels, broken ribs, consumption, cancer, etc.? If they think that the cure of that which they thought ailed them proves

that the ailment was what they thought it was, that may be a process of reasoning satisfactory to themselves, but to those uninfluenced by any spell, it seems to have its faults.

As an influence tending to produce an over-drawn picture by the patient herself, we may recall that there are writers of patent medicine advertisements who receive large salaries for their ability to so describe the symptoms of a disease that the reader shall think he has it. It would not be strange if some of those persons who have been so miraculously restored to health from incurable diseases had been reading such advertisements along with *Science and Health*.

In the most ordinary occurrences of every-day life, the person who describes them with exactness is rare if not unknown. The thermometer is never high enough on a hot day, nor low enough in a cold one, to match the stories which are told about it. No season was ever so severe; no climate so changeable. Startling occurrences, like fires, runaways, railway collisions, homicides, etc., no two persons will describe alike—no one will describe the same event alike twice. Let a description pass from mouth to mouth a few times and its relation to the real facts becomes unrecognizable. The little brook trickling down the mountain side becomes in the valley a mighty river—no more than keeping pace with the fish stories connected with it, however.

In times of religious excitement, when the imagination is aflame, or when the nerves are unstrung through disordered physical states, more especially when such conditions exist together, the subject is pretty certain to lose his bearings completely,—his mind will for the time being resolve itself into a chaos. Then not only will he exaggerate, but his statements may all become untrustworthy. Let one in such a state of mind then, by any means have

confidence in himself restored, and the difference in his feeling will be so great—the feeling of relief so intense and profound—that he can even believe (as Mrs. Eddy did in her own case) that a miracle has been performed. Only those well-disciplined in such matters are competent to understand the relations of sequences in vital affairs,—scarcely anybody who is at once both subject and diagnostician. When a doctor is sick he always calls in a doctor.

COINCIDENCES.

Charlatanry avails itself of all the accidents of fortune, for it is more anxious to make a case than to unveil a truth. Suppose a man had predicted the Galveston cyclone eight or ten months in advance of the event, many would have believed that he had a fore-knowledge of it. Or, suppose a prediction is made of certain other impending disasters, and then there follow a series of occurrences in seeming conformity to it, thousands can be made to believe that the forecaster has occult powers by which he sees events in advance of their occurrence.

Wonderful coincidences happen, as we all know, sometimes seeming to imply a relationship of cause and effect while in reality proceeding from causes remote and wholly distinct from each other. Herschel's weather tables compiled with reference to the phases of the moon furnish a notable example of such a misconception.

But whether the subject be the weather, a flood, a tornado or a miracle, the man who makes claim to know all about them, to be able to foretell them, to forestall them, or produce them, if he only has sufficient assurance, can get followers, and, with shrewd management, proofs. What nostrum and what quack who is worthy of the name that have not as big bundles of testimonials from those they

have cured as Mrs. Eddy probably? Many of them are just as sincere too.

Now suppose it is admitted that the Christian Science cures are real, that is, that the disturbing influences of imagination had been absent, that the complaint was precisely what the patient afterwards (always afterwards) said it had been, and that under the exclusive treatment of the healer she had been made entirely well,—what is proven thereby? Manifestly nothing for the main contention, for it is common enough for sick persons to recover without any attendance whatever, even also when some desire that they should die, and in this case nothing but attendance was given, coupled presumably with the desire for the patient's recovery. It is a perfectly fair presumption that the recovery came about naturally.

Taking the same data which are furnished by the actual Chrisian Science subjects it is just as easy to prove something else as to the cause, manner and nature of their recovery as that it transpired as claimed. For example, referring again to the case of the broken rib said to have been restored in a few hours, the cure might not have been of the rib that was broken, but a new rib may have been caused to grow in place of the old one, which may have been absorbed, or jerked out like the woman's cancer. The supposition as to a new rib is no more incredible than that respecting the old one, and the proof is just as conclusive, for the man went into the hayfield in the afternoon and worked as freely as before his injury.

Just here we are likely to be asked, If Christian Science did not cure the man then what did? And perhaps we cannot say. The most obvious answer would be, if we were not for the moment assuming that the ailments are what they purport to be, that the man's rib was not broken, therefore not mended. Nobody of ordinary common sense,

outside the spell of this strange belief and practice, would make any other answer.

CONTENT.

If this were merely a harmless *fad* which we are considering, and if it were not spreading fast, it would not be worth while to add anything to what has heretofore been done in the way of exposing its worthlessness,—time alone will do that. Its rapid spread among all classes, however, and the menace to health, public as well as individual, through the neglect of rational, precautionary and remedial measures, which a close following of it requires, make it a danger large enough to merit still further scrutiny. Its rapid increase is one of the marvels of the times. Five years ago the number of its devotees was estimated at 700,000, and to-day it is put at 2,000,000, and the Christian Science Church as occupying eighth place among religious bodies.

Its members are devout, sincere and kind, always optimists, and as regards their belief enthusiasts. Its preaching is solemn and impressive, abounding in reverential allusions to the Bible (always with "Eddyotic" interpretation), and heavy with a phraseology supposed to be scientific and metaphysical. Its atmosphere is, on the whole, pure and sweet; and in many other respects it compares favorably with other denominations. And yet it is not in any nor in all of these that Christian Science consists. If we would know what its essentials really are we must look for them in precisely those qualities which are unlike those of any other Church. Briefly they are comprised in the substitution of faith for knowledge in the treatment of the sick. All its preaching, all the lectures, all the Wednesday night experience meetings, all its literature, have that one end in view. Nothing is essential that does not bear upon this one point—healing; it exists for nothing else. More

particularly, it is a system of healing based on Mrs. Eddy, a more than mortal woman, gifted with prescience and the power of working miracles,—a power which she imparts to her followers by instruction, but which also resides in her book, *Science and Health.*

That it is a faith cure or mental healing simply is denied. To make this plain, she "dwells particularly upon the terms *belief* and *understanding,* which are the key words respectively used in definitions of faith cure and Christian Science," asserting that "the latter is based on what is held to be scientific certainty, namely, that all causation is of mind, every effect has its origin in desire and thought."* She became "certain" of this in 1866. This is the "Discovery," which Mr. Hanna refers to, as follows: "She discovered the science of healing embodied in that work (*Science and Health*) after years of practical proof, through homeopathy (!), that mind instead of matter is the principle of pathology, and finally sealed her proof by a severe casualty, from which she recovered through her exercise of mental power over the body, after the regular physicians had pronounced her case incurable."

If such words mean anything they mean mental healing. And as *mind* is one of Mrs. Eddy's numerous synonyms for God, the meaning is also faith healing. In fact, faith in her and God (*Hoch der Kaiser!*) is fundamental and necessary to becoming one of her followers, much more so to becoming one of her wonder workers.

THE DIVINE WOMAN.

One of the lecturers speaking in Detroit, February 13, 1899, said: "She is a second great Mary who has taught the world to know God." Mr. McCracken in a lecture at Lewiston, Maine, last year, said: "The name *Christian Science* was an inspiration." Rev. Geo. W. Tomkins in

* *Christian Science History,* by Septimus J. Hanna.

a lecture at Buffalo, said: "We consciously declare that *Science and Health with Key to the Scriptures* was foretold as well as its author, Mary Baker Eddy, in Revelation x. She is the 'mighty angel,' or God's highest thought* to this age (verse 1), giving us the spiritual interpretation of the Bible in the 'little book' *open* (verse 2)."

In the same lecture he also said: "THE REVELATION OF CHRISTIAN SCIENCE came to Mary Baker G. Eddy in the year 1866, and its truth and power were immediately demonstrated by signs following."

At the dedication of the beautiful new Christian Science church at Concord, N. H., July, 1905, the speaker said: "Mrs. Eddy was sanctified before she had birth"—not exactly a claim to an immaculate conception, but suggesting great possibilities for the future. If we may judge by present tendencies, we may perhaps be called on to contemplate her after she has left us as a fourth person in the Godhead. Shocking as these words must seem, they are not without foundation, as all know who observe the close approach to worship† which her votaries already manifest towards her,—their hushed and reverent attitude when she

* The assertion as to "God's highest thought" seems rather venturesome, for to know which is His *highest* thought requires a knowledge of *all* His thoughts. Besides, it has not been supposed heretofore, I believe, that the divine mind was differentiated into grades.

It seems unfortunate, too, for the gentleman's declaration, that in the two verses cited the mighty angel is spoken of as *he*. Elsewhere in Revelations whenever the subject is a woman the sex is always indicated by the pronoun *her*.

At the close of the chapter in which these verses occur, we read: "Thou must prophesy again." This would seem to be a singularly appropriate suggestion for Dr. Tomkins to have taken to heart as pointing to him.

† On Thanksgiving Day of 1905 her church in Concord addressed to her the following Prayer of Thanksgiving: "Beloved Leader and Teacher: We members of the church of Concord, whose beautiful edifice is your precious gift, earnestly desire the first glad Thanksgiving Day in our new church home to thank God for all the blessings that are ours through your wisdom, self-sacrifice and patient devotion to truth's holy cause. We are grateful for the respect which you have given us which has so blessed our lives and is blessing the whole world. We thank you for your unselfish labors. We share with you this joy in the general recognition by Concord's representative citizens of your life and of the abundant evidences of your successful endeavors to lead mankind to God and to the knowledge of His son, our Lord and Master, Christ Jesus."

passes by, standing in lines, hats off and tears in their eyes, while she slowly rides through with her carriage curtains raised high so that all may see—a vision seldom permitted. One is reminded of a May Procession to the Virgin, or of that event which Palm Sunday commemorates. Her "messages" are received with more deference than most Christians pay to an Epistle by St. Paul. Her "little book" occupies a place not inferior to—some times above, it would seem—the New Testament, which needed her *Key* in the same way that the Old Testament needed the New. And to fix her status still more firmly as that of no ordinary mortal, Rev. Irving C. Tomlinson, her minister in charge of the Christian Science church in Concord, said "Through her the vital, healing ministry of the Founder of Christianity is again preached on earth."

Whether Mrs. Eddy believes so much in her own divinity may be fairly doubted; yet such an implication follows from her alleged supernatural gifts and powers, and it sticks out from nearly every page she writes; and that she is not averse to having such a notion prevail is evident when we observe that the claims to that effect made for her by her authorized exponents—her lecturers and the official organs of the church—meet with no rebuke, but on the contrary, with a complacent silence.

It appears, then, that the "Discoverer and Founder" (capitals always, please—she never fails to use them when writing of herself) was illumined and ministered unto, like the prophets, apostles and saints of old; she was endowed with sanctity before birth; she has a supernatural insight* into Scripture and the essence of Deity, and her book (made to look like a Bible) is a miracle-working fetish.†

*"How can one acquaint himself with God? By studying *Science and Health with Key to the Scriptures,* and other works by Mary Baker G. Eddy."—*Christian Science History,* by Septimus J. Hanna.

†"Those who studied this book in connection with the Bible found them-

Such amazing credulity as all this calls for would be inconceivable, especially when found among men of education and refinement, if we did not see that it becomes necessary in accounting for the results claimed to be produced. Even as it is there is a tendency to hedge. Such extravagant language as that contained in the address of Dr. Tomkins (that address still industriously circulated as a Christian Science Tract, however,) from which quotation has been made above, is not often indulged in at present. More discretion is being used. Yet the attestforces the assumption. *Miracles cannot be performe without miraculous powers.*

THE HARVEST.

It has appeared astonishing to many that in this day of enlightenment it should be even proposed to reinstate practices the counterpart and equivalent of those which originated in ignorance and superstition, and which prevailed before the revival of learning; much more astonishing is it that such a proposition should meet with any success. And yet the propaganda of this cult is so ingratiating and persistent, so backed up by seeming proof and apparent scriptural authorization and command even, that our tender-hearted, conscientious, but easily bewildered Christians are being led into camp with Mrs. Eddy every day, for they are made to believe that their only alternatives, if they are not to become hypocrites, are, either to go with her, or to deny God's power. Not so many have taken the step as are ripe for it, but they are only putting it off, yet realizing its inevitableness. Already Mrs. Eddy has said that her believers must not be-

selves able to heal the sick, and cast evils out of themselves and others."—Rev. Wm. P. McKenzie.

"Many have been healed by its perusal alone, to my personal knowledge."—Dr. Geo. Tomkins.

long to other communions, and a second more imperative command will surely come, demanding that they break their old church connections altogether and go where they belong, or else forfeit their rights and privileges as her sons and daughters. Ye cannot serve two masters when one of them is Mary Baker G. Eddy. The regular churches are filled with just such ones.

Even the Church of England is being invaded by these ideas. Rev. B. S. Lombard, vicar of All Souls, St. Pancras, London, is proposing to incorporate "scientist" features in his work. In an interview he is quoted by the *Pittsburg Gazette* of Sept. 3, 1904, as saying: "There is undoubtedly something in faith healing which we of the English Church do not understand. These 'scientists' have the power of effecting cures, and we of the Church must see if we ourselves have not the power."

In fact the infiltration of these ideas throughout most of the churches is going on at such a rate that it would not be surprising if in less than twenty-five years as great a transformation should take place as that which occurred in this country during the first quarter of the last century—the movement towards Unitarianism,—when during one year alone (1819) 150 Orthodox Congregational churches without changing the occupancy of the church buildings, or the society membership, even retaining the same ministers, declared their adhesion to the doctrines preached by Channing. The leaven had been working quietly but irresistibly, just as it is now working; and the result was scarcely a surprise, just as the result in this case will be discounted in advance, because this membership will find that they also have grown out of their old beliefs into the new, and the only change necessary will be a change of name.

Those who regard this movement as merely a passing *fad,* soon to disappear, are closing their eyes to the evi-

dence which looms large out of the rapid increase of societies, and the numerous defections from the churches of every faith to allegiance to this very insinuating new neighbor.

NOT A SCIENCE.

Great wrongs have been perpetuated in the name of religion. But now truth and reason are made to suffer in the name of science.

If Christian Science vigorously searched through the data which come to its hands from its healers and the healed, classifying the facts according to some strict method by which all disturbing and doubtful factors were eliminated, taking its cases and holding them up to every possible light, inquiring in the first place whether the complaint was what it was said to have been, who said so, and what was his warrant for judging and his reputation for correctness in general in making diagnoses; and next, as to the competency of the patient to hold herself free from undue emotion and delusion of the senses, not given to exaggeration, or moved by an excessive zeal to prove anything for or against this or any other system or school, requiring, in fact, that all the evidence must be of a character capable of standing any test which may be put upon it, such as a trial in a court of law, or before a board of physicians and surgeons (who use "mortal sense"), or before any man or set of men whatever, no matter whether friendly or antagonistic, because knowing that such ordeals and severer than these, all other hypotheses and theories known to science have had to pass through before they could gain acceptance; knowing also that if this system contains, as it is believed to do, the most important knowledge in the world, and is to gain the widest notice and favor, it must confront and overcome every objection, every obstacle;—if it did all these things,

it might claim our respect; but it is obvious that it has never done any thing of the kind, nor, apparently, does it ever intend to. To even suggest any such proofs meets with an indignant repulse.

If now we inquire why it fulfils none of these common requirements of research—why it scornfully rejects their proposal even,—we shall find that it is not through any lack of confidence on the part of Mrs. Eddy's followers in the verity of what is claimed, but entirely because it is precisely not what they think it is—not a science at all,—but a fanaticism built wholly on belief and feeling, or consciousness,—on such a postulate as this: "Current mortal thought is unaware that the spiritual is the only truly natural, and that the natural, so-called, can only be understood through the lens of spiritual perception." And they quote: "To undertake to account for spiritual by the logic of material phenomena, is an infinitely greater paradox than to express a mother's ecstasy in algebraic terms, or to analyze grief by the chemistry of a tear." All which is to say that we are dealing with a "science" which is demonstrable only through the emotions.

Mrs. Eddy when recounting an early cure in her own case said, that she "felt a soft glow of ineffable joy. The fever was gone, and I rose and dressed myself, in a normal condition of health. Mother was glad. The physician marveled." And again later, at the time of that cure which she dwells on as ushering in her "conviction of the principle of divine healing," she speaks of "an illumination," "a ministration," and that she felt that a miracle had been performed. This is the phraseology of ecstasy.

To work out the details of the revelation, or discovery, which was made in such a singular way—"the discovery that all causation was mind, and every effect a mental phenomenon,—she retired from the world and devoted three years to prayer and study of the Scriptures, and on

returning announced a "Science of Divine Metaphysical Healing." The shorter name by which it is known now must not be taken to be an afterthought—remembering Mr. McCracken's assertion regarding its divine impartation,—but it may be permissible to conceive that it would have been too precipitous, no doubt, to have had both subject and name revealed all at once. The world may have been expectant and waiting for the revelation—as has been broadly intimated,—but it was not prepared to receive so much illumination in a single flash; it was better that it should come in intermittant gleams—progressively as it were.

And this "Discovery," which her healers make their by pursuing a course of study (?) extending over "a period not less than *two weeks*," a course which, by the way costs them three hundred dollars—"the demand made under Truth's guidance by the Teacher"—Mrs. Eddy calmly asserts, enables them to understand "mental anatomy" (Shades of Descartes and Locke!), and deal with the "real cause of disease"—as we have seen, to correctly diagnose and cure "internal decay," atheism, broken bones, consumption and cancer. Three years at devotions on her part, and two weeks study of what she discovered through her devotions, on the part of her healers, and all the learning of the ages concerning the human system has become obsolete! And there is a large body of men and women holding themselves to be intelligent as well as sincere who call this conglomeration of mysticism, illusion and fanaticism a science!

But is it all a fraud and a delusion? If we are obliged to answer, Yes, we may yet need to qualify, by admitting that the fraud is probably largely unconscious, and the intention good — not forgetting, however, what has been said about the pavement of Hades;—but when we consider the consequences to helpless children and the aged

of resorting to a course which is no advance over shrine cure and relic cure, denying them the benefits of a skill which alleviates suffering and prolongs life, such qualifications have no saving grace. A fraud which leads to disastrous consequences becomes no more lovely because well-meant, nor does the fact that it was perpetuated in the name of religion and science, or was unconscious of being a fraud, mitigate those consequences. Some of the greatest afflictions which men ever suffered have been due to benevolent ignorance.

"They that be whole need not a physician, *but they that are sick.*"—Matthew ix, 12.

"And I took the little book out of the angel's hand and ate it up; and it was in mouth sweet as honey, but as soon as I had eaten it, my belly was bitter."—Revelations x, 10.

HENRY WHITE.

THE EVOLUTION OF CHRISTIAN SCIENCE.

WHEN the most energetic of the Apostles declared that the new religion with which he had cast in his lot was "unto the Jews a stumbling-block, and unto the Greeks foolishness," he did, after all, but declare in other words that it was a new religion. Every new-born faith that has enough promise to make it worth noticing at all is a stumbling-block to those who hold fast to the old. All faiths are alike foolish to those who have none. Only to them that are saved does any faith become the power of God.

One need, however, drop down no more than a few generations of the early Church to find a time when Christianity, though it still remained a stumbling-block to the Jews, had ceased to be foolishness to the Greeks. But it was not the Greeks who had changed. The new religion having reached years of discretion, had put away childish things, and to the wisdom which is from above, had added the wisdom of this world. The problem of the first Christian centuries, if we may trust the historians, was not only to convert the world, but at the same time to rationalize the faith.

One sees the same process in almost any successful religion—indeed in almost any spiritual movement of any sort. The race of prophets from Amos to Emerson—or if one pleases, to Shaw—has tended to see more widely than clearly. To borrow a phrase from the makers o

optical instruments, their illumination has been superior to their definition. The prophet not only sees the truth, he is seized by it. In consequence he is too apt to utter his words in a tongue, and leave it for other men to interpret them. Hence the Talmuds and the glosses, the commentaries and the criticisms, the Platonizing Fathers and the Browning Clubs. The business of them all is to set forth what the prophet would have said if he had been—as he rarely is—the servant and spokesman of the Almighty, and at the same time, an ordinary commonplace individual, moderately familiar with the learning of the Egyptians. The treasures of the soul are in earthen vessels: it is the business of the two and seventy warring sects to make out which is which.

Considerations such as these apply with especial force to the new sect whose rise and progress is in all respects the most interesting, as it is the most significant, religious movement of the day. I mean, of course, Christian Science. Doubtless we are, as the Apostle remarked to the Athenians, somewhat too religious. There are several minor Christian denominations which, to the outsider, present no very convincing reason for their existence. There are several proprietary religions which seem, fortunately, destined not to survive their inventors. Besides all these there is Mormonism.

From these, however, Christian Science is obviously marked off. In the numbers, the wealth, the social status, the intelligence, and the morality of its adherents, it is not inferior to the older Protestant bodies. There is no question of personal magnetism, since a small portion only of the members of the sect have so much as laid eyes on the founder, while the practical management of affairs is almost altogether in other hands than hers. There is no social, political, or industrial machinery such as makes the strength of Mormonism; nor are there social and political

ideals, such as for many men make a religion of socialism. In fact, at the present time in this country there is no body of believers concerned so exclusively with their own personal religion as are the adherents of Christian Science. Indeed this very absorption in religion to the exclusion of more fashionable interests, is one of the stock objections which hostile critics of Christian Science urge against it. There is, however, no occasion to enlarge on these obvious facts. Judged by the great American test of success, the religious body that, after putting two millions of dollars into a single church building, is compelled to issue appeals to its members not to give any more money, the body which finds its financial problem not to raise funds but to check the flow of supererogatory gifts, the body, I say, which can do this, shows itself able to provide "a gospel for an age of doubt."

Now the strength of Christian Science appears to lie in two different elements. The least important is that it conforms to the current monistic fashion in philosophy, and is based on that system of opinion which, when all is said, has the best standing in the schools. Even its somewhat crude idealism is better than the equally crude realism of its rivals. This, however, is a rather small matter. The real reason why at the present moment Christian Science is spreading by leaps and bounds is that, all theory aside, it does make men and women happy. Its one clear call is that

> "The mind is its own place
> And of itself can make a Heaven of Hell, a Hell of Heaven."

The simple-minded believer who has heeded this call and found heaven, needs of course no further proof. Not for him the rationalizing process, the adjustment of his living faith to science and philosophy. The twice-born,

finds himself a new creature, is quite content to take the map of his new earth on faith.

In this, one need not say, the Christian Scientist is precisely on a par with other believers. The good Catholic is not troubled by certain unsavory chapters in the history of the papacy. The good Protestant is not troubled by the New Testament devils, nor by the millennium which did not arrive before one generation had passed. To neither has it occurred that there is any problem.

Nevertheless there are always doubting Thomases, who walk in part by sight. For these there are the pious historians to explain away one class of troublesome facts, and the experts in Biblical exegesis to attend to the other. There are half-a-dozen different systems for proving that the first chapter of Genesis is in so exact accord with the teachings of geology that this fact, in itself, affords a powerful argument for the inspiration of the Scriptures. Each time a new geological doctrine has supplanted an old, a new exegesis has reconciled the two. Who can doubt that, if this new Planetesimal Theory shall become orthodox science and all our ideas of the early states of our earth become precisely reversed, the first chapter of Genesis will display a miraculous coincidence with these also?

Christian Science, therefore, differs from most other forms of religion only in being younger. It is not inherently less reasonable than they. It simply has not yet been rationalized. There are, of course, passages in Mrs. Eddy's writings that need to be spiritually discerned to make them agree with certain others. But think of the amount of learning and piety that has gone into making the Fourth Gospel line up with the Synoptics! There are passages in *Science and Health with Key to the Scriptures* which, I suppose, do not strike the carnal mind as especially edifying. Is there any thing more impossible than the Song of Songs would be without the figurative interpreta-

tion of the chapter headings? Every great religious teacher has grasped some one great truth—the unity of God, the sonship of man, the order of the moral life, the mystery of pain, the supremacy of the mind over the body. The prophet is a prophet because on this one point he has made himself understood. In addition, he has usually said a good deal more that he might better have expressed differently. All sacred writings require a certain amount of conscious or unconscious editing. It is only because the formulas of Christian Science have not yet undergone this purging, that they are so easy a mark for the unsympathetic and irreligious critic. Wait until Christian Science has developed its exegesis and its apologetics, wait until it has collated its divergent texts and suppressed all but the least troublesome. The system will be no truer, to be sure, but it will be less vulnerable.

Nor is the case in any wise different if one looks upon Christian Science, not as a religion, but as a system of medicine, and compares it with other medical cults, say for example, homeopathy. The tenets of the original homeopathists are, on their face, quite as absurd as anything between the covers of *Science and Health*. Its early practitioners were just as innocent of any knowledge of the organism they purposed to treat as any Christian Science healer. If Christian Science "has added a new terror to matrimony," so in its day did homeopathy.

Behold now the change. The homeopathic medical schools are not conspicuously inferior to others, nor the homeopathic practitioner obviously less well trained or able than his somewhat pharisaical rival of the regular school. The vagaries of Dr. Samuel Hahnemann have been explained away or forgotten until all that remains visible to the layman of his system is a certain mild prejudice against heavy doses. History has only to repeat itself, to give us by the end of the century, the "scientist" and

the regular practitioner in alliance demanding more laws for the suppression of the next great medical heresy.

Christian Science, then, like any other vigorous religion with a future before it, is bound sooner or later to go through a rationalizing process. The point that I wish especially to emphasize is that this inevitable process has already begun. If any one wishes to see for himself how a local cult works itself clear of its limitations and becomes a world-religion, here is his chance. The body of doctrine which from the first has been, in a general way, Christian, is now apparently on the point of becoming, in a sense, scientific.

Even the casual reader of Christian Science literature can hardly fail to note the occasional scientific note among the chorus of halleluiahs. Along with a great deal that is best read with the eye of faith, goes not a little carnal logic quite within the understanding of the natural man. One sees this especially in the apologetic and controversial writings of such men as Judge Hanna, Mr. Edward A. Kimball, Judge Smith, Rev. Arthur Vosburgh, Mr. Alfred Farlow—men whose mental operations are quite the reverse of those which general opinion assumes in followers of Mrs. Eddy. More than one hostile critic who has attacked carelessly, thinking that he had to do with the vaporings "of an old woman in New Hampshire, who ought long ago to have been in jail for obtaining money under false pretences," has had occasion to sympathize with the historic parrot that talked too much.

It must not be forgotten that Christian Science is fundamentally a religion: not a system of therapeutics. It is, in fact, quite conceivable that it may, in the course of time, lay aside its claims to heal the body: the Christian Church has for various reasons given over its casting out of devils and its laying on of hands. Possibly this same rationalizing process which we are considering, tends to suppress

the primitive miraculous gift. Nevertheless, since Christian Science does, obviously and as a matter of fact, heal the sick, its theory of its own healing power and its limitations is a convenient measure of the extent to which, even in the founder's lifetime, a conscious taking thought has begun to supplement the open vision.

How far this inevitable rationalization has already gone was demonstrated strikingly, almost dramatically, during the convention of Christian Scientists at Boston in June, 1906. On the day following the dedication of the great temple, one of the large sight-seeing automobiles, with useless brakes and stripped gears, ran violently down a steep place, dropped over a ten-foot embankment, and piled into a pitiable heap some thirty or more unfortunate delegates. Luckily no one happened to be killed, but there was the usual array of broken ribs and twisted limbs. All observers unite in testifying to the cheerful courage of the sufferers—women too badly hurt to move lay on the ground in the rain and joined in the hymns of their faith. The next day, most of the victims were attending meetings as if nothing had happened. There was a striking absence of suffering from nervous shock.

The noteworthy point is, however, that while all the injured made light of their hurts, for the most part they accepted surgical aid. Since, therefore, those persons, from the fact that they were at the convention at all, are presumably at least representative disciples of Mrs. Eddy, it is evident that their behavior lies within the limits of orthodoxy. Shortly afterward, the leaders of the convention, taunted with their departure from the faith lately delivered to the saints, explained officially that Christian Science not only allows but encourages surgical aid.

The surgeon, they pointed out in effect, merely puts back the displaced bone; a very different agent makes it whole. Disordered bodily processes are "errors of mortal

mind"; mechanical injuries are not. A consistent Christian Scientist will no more refuse the help of the medical man in altering the position of one of his bones, than he will decline the aid of the trolley car in altering the position of them all. In short, to state the "Scientist's" case in words very different from his own, an art which has to do with the location of objects in space, cannot be in conflict with a faith which has to do with ideas in the mind.

Moreover, it is (or should be) well known that the faithful are now enjoined not to treat any contagious disease, but on the contrary to conform heartily to the regulations of boards of health. While still maintaining his theory of disease and his rights as an individual, the Christian Scientist finds that practically there are certain errors that are peculiarly liable to spread to other mortal minds; and as a good citizen, he will take all reasonable precaution against upsetting the mental balance of his neighbor.

The distinction between sickness and injury, and between contagious and non-contagious diseases, is from the standpoint of Christian Science, a perfectly valid and reasonable one. It is obviously, too, a distinction of profound importance to the development of Christian Science theology. Yet the matter is treated almost as lightly in Mrs. Eddy's writings as is the doctrine of the Trinity in the New Testament. Both doctrines are aspects of that rationalizing process which every persistent religion has to undergo. Both rest on induced rather than primary meanings of the sacred text.

Take by way of one more illustration of the same tendency, Mrs. Eddy's familiar doctrine that the effects of remedies and poisons are due solely to the belief of the people who take them. Stated crudely, it is distinctly a hard saying. Subjected to the exegesis of the more academically-minded believers, it takes on a different aspect. As all idealists, from Bishop Berkeley to Mrs. Eddy, agree,

the entire material universe and all the properties of matter as we know it, are unthinkable without the perceiving mind. But the chemical properties of such bodies as are mentioned in the Pharmacopœa are also dependent on a perceiving mind. If, therefore, the Absolute Thinker who thinks the universe, and the mortal thinkers that use human brains, united in thinking that sulphuric acid is a pleasant and wholesome beverage, and in addition, *thought out all the rest of the universe consistently with this idea*, then would sulphuric acid cease to corrode human flesh. In short, the newly discovered drug is poison or medicine, not because the patient thinks it so, or because the doctor thinks it so, but because all thinkers great and small, and the Universal Thinker as well, are constrained, in this detail, to think consistently with all else which they have thought since the foundation of the world. The position is one that no Idealist can gainsay. Once admit the validity of the method of proof-texts, and it becomes a legitimate interpretation of Mrs. Eddy's language. If the exegesis seems a trifle forced in places, let us not forget the "days" of Genesis, and the "creeping things" which, in a single passage only, are the larger carnivora.

The rationalizing process once under way, the result is reasonably obvious. If one may set a broken bone, he may extirpate a cancer. If he may kill a savage dog with a gun, he may kill a bacterium with an antiseptic. Half the fine-spun logic that has gone to straightening out sundry other faiths, will make *Science and Health* read like a geometry. It is a poor sort of sacred book from which cannot be taken out far more truth than its maker ever put in.

When, therefore, the inevitable rationalization of Christian Science shall have done its work, when its vagaries like those of all young religions, shall have gone the way of the communism and the millennianism of the

early Church, of Luther's belief in devils, Wesley's fear of witchcraft, the indecent antics of the New England Quakers, there will remain two worthy achievements. Christian Science will still be the single religion, available for the Western world, to stand upon a thoroughgoing and uncompromising idealism. It will be in addition, the first modern attempt to make on a large scale practical application of religion to the palliation or cure of some of the most distressing ills of this mortal life.

For there can be no doubt that, for the most part, the cures of Christian Science are real cures. Aside from all questions of the fallibility of inexpert testimony and amateur diagnosis, the fact remains that the man in the street does know when he is sick and does know when he is well again. Beyond this, however, lies the still more significant fact that already for several years a small group of competent and reputable medical men have been curing the same kind of diseases by essentially the same methods.

I need not say that I refer to the practical results obtained by such men as Bernheim, Charcot, Braid, Janet, Wetterstrand, Bramwell, Tuckey, van Renterghem, Prince, Sidis, all physicians as well as men of science, who report yearly the cure of hundreds of cases by means of hypnotic suggestion alone. Now suggestion is suggestion whether given by some ignorant healer or by some professor of experimental psychology with an international reputation. The one talks vaguely of the errors of the mortal mind; the other talks learnedly of persistent subconscious ideas. They evidently mean pretty much the same thing. Both alike, and in not very unequal measure, put an end to ills that do not yield to more usual methods.

The literature of Christian Science teems with cases of which the following are typical. A man going to the dentist to have five teeth extracted, is told that he will feel no pain whatever. The prediction is so far borne out that

even when the operator, by way of experiment, turns a tooth round and round in its socket before drawing it, the patient feels no distress and laughs as he spits out the blood. A middle-aged woman suffers so much from eczema that she cannot sleep and after four years of orthodox treatment and one surgical operation, gives up medical help and becomes steadily worse. The idea is impressed on her that the disease exists only in her mind and that as soon as she expells the delusion she will be well again. Immediately all irritation vanishes. In a fortnight she is completely cured, and three years later there has been no relapse. A boy of sixteen receives a blow on the knee, and as a result, the joint becomes so swollen, painful and stiff that a month later the limb remains partly flexed and can neither be bent further nor straightened. The "error" needs to be "demonstrated" but once before the boy can walk without limping, and the swelling has departed.

Cases of this sort, I say, are to be had by the hundred in the literature of Christian Science. These three, however, happen to be from other sources. The first is one of Dr. Bernheim's from his *Suggestive Therapeutics,* the second Dr. Bramwell's from his address before the British Medical Association in July of 1898, the third is Dr. Wetterstrand's from his *Hypnotism and Its Relation to Practical Medicine.* One could cite such by the hundred. Neither the medical man nor the Christian Scientist can in these matters give odds to the other. Sauce for the goose is sauce for the gander. The only obvious difference is that the medical men, before casting out the errors of mortal mind, are obliged, usually, to hypnotize their patients, whereas their rivals are not.

Yet even this unimportant distinction breaks down with Dr. Boris Sidis's discovery of the hypnoidal state in which the patient, while highly suggestible for his own good, is reasonably alert, entire master of himself, and in no wis-

under the control of the operator. Thus with the progress of medical science, its methods tend to assimilate themselves to those of Christian Science.

Since, therefore, successful and reputable physicians, ever since the days of Mesmer, have systematically and purposely made use of suggestion, it is the least rational of all objections to Christian Science that it works its cures only by acting on the "imagination." Of course it cures by acting on the imagination. It has never for a moment claimed to do anything else. That aspect of the self which the man in the street calls hazily "the imagination," Mrs. Eddy with hardly more clarity terms "mortal mind." Both are obviously vague terms for the subconsciousness, the subliminal self, of the experimental psychologists. "If I by Beelzebub cast out devils," the Christian Scientist may justly answer the physician, "by whom do your sons cast them out?"

Nor is there much more sense in that other stock argument against Christian Science—that it goes on all fours with osteopathy, mental healing, faith cure, the original and unrationalized homeopathy, blue glass, herb doctors, vegetable compounds, natural bone setters, and all the rest of the great host of quacks and quackeries that afflict mankind. In a sense this is, of course, obviously true. All quackeries are in part, devices for influencing the bodily processes by way of the subconscious mind. But surely, the last reason for distrusting any system of medicine, or any system of anything else, is that it works even in dishonest or incompetent hands.

Yet after all, Christian Science is a religion with its theology, its worship, its temples, its sacred book. Its cures are but an incident in a larger work. The physician may cure by suggestion and remain a man of science. The Christian Scientist may cure by suggestion and remain a teacher of religion. If a man is to be made whole by means

of psycho-therapeutics, it may be a matter of doubt whether science or quackery or religion will be the most efficient. There cannot be any doubt which, on the long run, is likely to be the most wholesome. It is good even to be duped into health. It is good also to be hypnotized into it. But it is still better to be converted.

There is also another strange delusion concerning the cures of Christian Science—the idea that because its special field is the group of functional, nervous, "imaginary" disorders, it is therefore of no special consequence. To begin with, it is not true as a matter of fact that suggestion is valuable only in functional diseases. The regular medical practitioners who employ the methods of psycho-therapeutics, do actually find them to be, in some measure, efficacious in organic diseases as well. Aside from this, however, whence comes the idea that an "imaginary" disease is a small matter? If one were to choose between being hit by an express train and having his legs broken, and being missed and having his legs paralysed by a nervous shock, he would far better take the hit. The broken bones would be whole in a few weeks. The "imaginary" trouble might easily cripple him for life—unless he were lucky enough to consult some expert in morbid psychology, or become a convert to Christian Science. Under modern conditions, it is precisely the "imaginary" ills, the nervous dyspepsias, hysterias, paralyses, dipsomanias, neurasthenias, neuralgias, auto-intoxications, insomnias, that are most fatal to happiness and most difficult to cure.

I suggest, then, the square deal. Of course, nothing is easier than to make fun of Christian Science. But then nothing is easier than to make fun of any religion that one does not happen to believe. The late Robert Ingersol made a very comfortable addition to his yearly income by ridiculing Christianity and showing up its inconsistencies and absurdities. What religion is there that has escaped

the merry jibes of the skeptic—or to be candid, has failed to deserve them. Ultimately, absolutely, it is no more ridiculous for a man to sit in a stuffed chair and administer absent treatment to a sick cow, than for a man to fall on his knees on a stone floor and cry aloud to a brazen sky. Both have provoked laughter.

But so far as religions are foolish at all, a new religion is bound, in the nature of things, to be twice as foolish as an old one. Christianity, we all recognize, is in part the product of the "Christian consciousness." Mohammedanism, in like manner, has been worked over and rationalized by the Mohammedan consciousness. But Christian Science has thus far shown only the first beginnings of a Christian Science consciousness. It does make men happy. It does make men whole. It does not yet make them theologians. Any system of opinions ought to be acceptable according as it hath, not according as it hath not. More than the traditional forty religions are saying, "Thy sins be forgiven thee!" As many systems of medicine are saying, "Rise up and walk!" What other than Christian Science is saying both?

E. T. Brewster.

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CHRISTIAN SCIENCE AND THE REASON OF ITS STRENGTH.

WE do not hesitate to accept the theory of de Lametrie as summed up in the title of his little book *L'homme une machine,* only we insist on the truism that all living organisms, even plants, are alive and therefore *living* machines, and further that animals are both *living* and *sentient* machines, which implies that, though sentiments and thoughts considered as such are not motions, the physiological process which takes place in nervous substance while man feels and thinks is purely mechanical. We purposely do not say that thought is motion, but that the physiological process of thinking is as mechanical a process as is an electric shock, or a chemical combination, or the movement of a machine. Brain-action is a most complicated process involving chemical changes and electrical tensions, but with all its wonderful and untraceable minuteness of detail in molecular mechanics it is as physical a phenomenon as the fall of a stone or the motion of a lever and the turn of a crank.

Without entering into a discussion of the basic conceptions of psychology, we will only point out some important conclusions establishing what is popularly called "the power of mind over matter," which can be directly derived from the principles of this most radical and, in scientific circles, largely accepted theory. A due appreciation of the oneness of thought and physical brain action will throw

more light even upon those mental phenomena that have often puzzled thoughtful observers, than do mystical and spiritualistic theories.

The character of a man is a very important factor of his life. Indeed we are justified in calling it the most important one. It is even more important than the question whether or not an engine is well oiled. Two machines may be of exactly the same construction, but if one is not properly lubricated, it will refuse to work. In the same way a man who is dejected in spirit, and of a gloomy and pessimistic disposition will naturally prove a failure, while some other day if he be buoyant and in high spirits he will without difficulty be successful in the same kind of enterprise. Just as an engineer must keep his machine well oiled so must we keep our minds well disposed and thus overcome the jarring friction of ill-temper.

It is remarkable to what an extent the disposition of a man enters as a factor in his daily life. It may make or mar his destiny, and if anything lies within our own power to regulate, it is our attitude toward the world.

Kant tells us that he suffered greatly from *angina pectoris*, and we know that patients of this type are subject to nightmares and many psychical depressions which sometimes render them unfit for transacting business and prove a great hindrance to their mental and bodily development. Kant acquired a thorough medical insight into his condition, and, simply by a calm consideration of the physical character of his disorder, mastered it to such an extent as to conquer it almost entirely. He reached an advanced age and suffered very little during attacks because he prepared himself to receive them with a calmness that made them pass by without disturbing his mental equilibrium or doing any other incidental harm.

But the influence of mind over matter goes further still. A belief in ghosts will conjure up ghosts, and these

specters are as real to the visionary as dream apparitions are to the man in ordinary normal sleep. We must only consider how sense-impressions originate, and bear in mind their subjective nature. A hallucination, though purely subjective, is frequently as concrete and definite as the sensation of a real objective thing, and it is true, as Shakespeare says, that we are such stuff as dreams are made on. The unsophisticated man believes that he sees an external object, but the thing that appears to him outside of himself is in fact a sensation on his retina. If memory traces of former sensations registered somewhere in the nervous substance of the brain are stimulated, they are revived and if the process is sufficiently strong they will be almost as vivid as the sensation of the original impression. This should ordinarily happen in dreams only, but it also occurs in the waking state of consciousness, quite frequently among primitive people, while in civilized society it is rare and mostly limited to a few abnormal minds, where it may or may not be a symptom of disease. The poet's imagination is sometimes so vivid as to make him actually see the visions of his mind to which he gives utterance in verse, and the inventor similarly visualizes the combinations of his devices. Men of a critical disposition and trained in the art of self-observation will analyze the form of any apparition that may come to them and the specter will dissolve before their eyes under the wholesome influence of a calm contemplation.

Goethe tells us in his "Erlking" the tragic story of a child who died of fright, and Bürger in his "Leonore" relates the feverish hallucination of a maiden whose lover did not return from the field of battle. In these cases the cerebral agitation of an excited mind affects the whole body and leads to a tragic end. To the same category belongs the story of the death of a court jester who for some bad joke had been condemned to death, but secretly

pardoned. His master, a German duke, had ordered the executioner to use a long sausage instead of a sword, but when the stroke came, the poor fool expecting to die, fell dead.

A striking instance of the power of faith is the story of the holy lance of Antioch which saved the army of the crusaders from perdition, and it is important for our purpose that the details of this most interesting and instructive event are historically well established and even the legendary accretions can be traced to their origin, since many accounts were written down immediately after the marvelous delivery of the Christians.

The crusaders, divided according to nationality (among which the Normans under Boemund and the Provençals under Raimond were the main constituents) laid siege to Antioch in May 1098, but Kerbogha of Mosul approached with a large army which, according to some reports was not less than 300,000, and according to others even more than 600,000. It was a well equipped and formidable army which by numbers alone threatend to crush the bold invaders. Before the Moslem forces reached the field of action Boemund succeeded through the help of a traitor to take possession of Antioch (June 2) but the situation soon became more precarious. Kerbogha cut off the supply of food and water so as to reduce the Christians to a miserable plight, and many of them, even some of the leaders, such as Count Stephen of Blois and for a time even Peter of Amiens, deserted in despair; some surrendered to the Saracens and became Moslems, while others tried to make their escape, most of them perishing in the attempt. The starving crusaders in their dire emergency were compelled to eat the most incredible things if they could but be chewed and swallowed; grass, the bark of trees, shoe leather, and the half-decayed carcasses of dead animals were deemed a luxury. At the same time Kerbogha

harassed the weakened soldiers by constant attacks and tired them out through the necessity of being constantly on the alert to repel the enemy. Rarely has an army seen more distress than did the crusaders in those days. They became lamentably demoralized and their final destruction according to all human calculation seemed to be merely a question of days.

At this point Peter Bartholomew, a man of low birth, came to Count Raimond and announced that St. Andrew had appeared to him in a vision and had shown him the holy lance with which Christ had been pierced at the crucifixion, and informed him that it lay deeply buried in the church of St. Peter at Antioch. If the crusaders would but come into its possession they would soon be delivered from all their trouble. Count Raimond and most of his Provençals gave heed at once to Peter Bartholomew's message, while Boemund and his Normans smiled at their credulity. Twelve men dug in the church for a whole day until night time. They had almost despaired of finding anything when at an advanced hour of the night a lance was actually discovered. And now the joy of the crusaders knew no limit. Many doubters became converted and the hope for a final victory revived at a marvelous rate. Boemund and his more critical friends did not oppose this powerful wave of fanaticism, because it accomplished as if by a miracle what they had long tried in vain to do. The spirit of the whole army was changed, for a bold confidence in their cause had replaced their former pusillanimity.

By general consent Boemund now took command of the whole army. The other princes recognizing his higher ability voluntarily surrendered to him their authority. He restored order among the demoralized troops and with great circumspection prepared an attack on the enemy whose numbers were several times their own. The crusaders had to leave behind almost half of their own army to de-

fend the fortifications of Antioch, while the Saracens could lead their entire forces into battle. In spite of these enormous odds the Christian army was ensouled with a faith in the miraculous power of the holy lance which was carried in front of their army, and this fanaticism which fortunately was combined with the calm judgment of Boemund, inspired the Christians with almost superhuman strength and made their onslaught irresistible. The battle was fought out to a finish and Kerbogha's army was annihilated on June 28th. The Moslem camp with its rich supplies and great treasures was taken and Antioch with the surrounding country became the undisputed possession of the victorious Christians.

Boemund had always doubted the genuineness of the lance, and he finally succeeded in proving his contention. He kept silent so long as he saw that this grand faith cure restored the sinking courage of the Christians, and in this instance the miracle was accomplished although the lance was an imposition and its discovery a farce.

Similar triumphs of preconceived ideas in which the power of thought, whether wrong or right, true or false, plays an important part, happen frequently,—we have only to refer to the case of the Maid of Orleans; but events are rare in which we can trace success so clearly to the enthusiasm of a superstition as in the case of the holy lance of Antioch.

It is remarkable that a similar confidence in success seems to extend also to animals, to machines, and even to the most lifeless objects. They seem to be better fitted for their purpose and we can not doubt that the way they are handled frequently makes them more serviceable in critical moments.

Superstition alone is apt to lead to failure, but when fanaticism is coupled with a levelheaded circumspection it can surmount the greatest difficulties and accomplish,

not exactly the impossible, yet assuredly incredibly great things. The Roundheads were strong through prayer, but Cromwell used to remind them of the necessity of keeping their powder dry.

All instances of faith-cure, the healing by prayer, mesmerism, etc., also the miraculous cures in the cemetery of Père La Chaise at Paris, mentioned by Hume, belong to this class and prove the influence of mind upon the domain of physical nature. If we remember that mind is the subjective aspect of physiological processes, and if we understand the full significance of this close interrelation of matter and mind in all its consequences, we can not only judge how these apparent miracles are possible, but will also know their limitations. To the naive believer the experience of one flagrant success is such an evidence of the unlimited power of faith that he will fondly imagine that there is no end to the possibilities of faith and that failures are always due to unbelief. Says Jesus:* "Verily I say unto you, If ye have faith as a grain of mustard seed, ye shall say unto this mountain, Remove hence to yonder place; and it shall remove; and nothing shall be impossible unto you."

We cannot doubt that Christianity in its primitive forms actually cherished the hope of being able to cure by faith, although this feature was not made prominent by St. Paul, nor was it encouraged by the organizers of the Church, but an adherent of this idea inserted into the canon this parting word of the resurrected Jesus to his disciples (Mark xvi. 17, 18): "And these signs shall follow them that believe; In my name shall they cast out devils; they shall speak with new tongues; They shall take up serpents; and if they drink any deadly thing, it shall not hurt them; they shall lay hands on the sick, and they shall recover."

* Matt. xvii. 20.

Here miracles are positively made the signs of discipleship, and we can not doubt that among the early Christians many events happened and many things were believed which aroused in them the confidence that miracles were possible indeed.

The truth is that there is actually a power of mind over body, and this power seems almost incredible in its varied applications and marvelous results. But we would say that from a monistic standpoint they are simply what ought to be expected, and many unusual successes are attainable without a belief in miracles solely by self-control and self-discipline. People of a deficient education and without strength of will are frequently helped by fanaticism and superstition; they can be so electrified by a thrilling error as to accomplish things greater than they know or comprehend. They become, as it were, the instrument of a mystic idea which seizes them and carries them away they know not whither; and so they are naturally bewildered by the spiritual storm that with a happy blast carries their soul into a haven of safety.

It is apparent that many phenomena of faith-cure, Christian Science, mental healing and their ilk are as well established as they are old and well known to historians. The Christian Science movement is the revival of a belief based upon certain experiences and to some extent justified by remarkable events that have happened again and again under all zones and in all ages. Such beliefs crop out spontaneously whenever they are needed and will disappear again when they have done their work. Sane men will naturally employ the good that is in Christian Science and faith-cure. In fact they have done so long ago and all the time. To them the gospel of Christian Science is nothing new. But to those who lack the self-discipline which ought to be a part of an all-around education, it will come as a remarkable help in many difficult situations and will,

if it but be kept within fair limits, contribute to their spiritual as well as bodily welfare.

It stands to reason that the errors of the movement will soon be remedied by experience, though in some cases it may have to be bought dearly. In the meantime, however, it will make its devotees cheerful when others would fain break down in the tribulations of life and will give them strength sometimes under extraordinary difficulties.

The significance of self-discipline and the power of mind has been unduly neglected by educators, physicians and other guides and advisers of mankind. To be sure Christian Science has its very weak points, but it would not exist had it not a mission to fulfil.

EDITOR.

NEW PRINCIPLES IN AGRICULTURAL PLANT-BREEDING.

THE theory of mutation is directly opposed to the current view of an origin of species and races by means of slow and gradual changes. It assumes a saltatory transformation of one form into another, or rather, since the parent form does not disappear in the process, it claims the production of new forms by lateral saults from the main stem. In this way the same species may produce quite a number of new types, either simultaneously or at short or long intervals.

This new principle finds its application in nature as well as in agricultural and horticultural practice. It is now rapidly gaining acknowledgment among biologists, but many plant-breeders still keep to the old view. They prefer a slow amelioration of their races to the more rapid improvement, of which the theory of mutation points out the possibility. Their vast experience supports their view, at least apparently, and until some time ago, no direct facts could be adduced to give proof of its inaccuracy. It is always venturesome to oppose a scientific theory to practical experience, and such a process can only be successful if it is possible to give a full and evident explanation of the facts on which that experience was based.

In the case of plant-breeding, however, new discoveries concerning the variability of cereals and other crops have been made of late. Dr. Nilsson, the director of the Agri-

cultural Experiment Station at Svalöf, Sweden, has f
that this variability wholly complies with the views
pounded by the theory of mutation and does not su
the conception of slow changes as a means of impr
agricultural races. During the last fifteen years h
produced quite a number of new and valuable races w
have already supplanted the old types on numerous f
of Sweden, and which are now being introduced into
many and other European countries, on a large scale.
his races have been produced by a single choice for
after that they proved constant at once and had only
multiplied and to be compared with the existing for

Theory and practice thus being in perfect harmo
appears desirable to submit the opposed views to a s
criticism. The question naturally arises, in how fa
processes now generally in use may be modified ad
tageously by the introduction of the new principle.
evident that the reduction of the selection, which now
braces a series of years, to one single choice, must sim
and shorten the work, and that on this account, the
ideas have a distinct claim to consideration.

The current view assumes that varieties of plant
be changed artificially in such ways as the breeder
choose. It is claimed that existing characters can be m
fied, and that new qualities can be forced upon the pl
Environmental influences and selection are the means
ployed. From six to ten generations are said to be
erally sufficient to fix the descendants of the origi
chosen individuals in their new ways. This lapse of
is required to prevent the new varieties from reve
to the former condition. When once stability is sec
the variety may be counted upon to keep true to its
qualities.

This conception originated at a time when the diff
types of variability were still unknown. It combines

belonging to contrasting phenomena into one single process, and therefore must seem inviolable only as long as it is not possible to make that distinction. Modern science, however, has shown that variability embraces two main subdivisions, which follow quite different laws. One of them is now called fluctuating variability, or fluctuability, and the other mutability. Fluctuations are the slow and gradual changes, which are always present in every cultivated race or wild species. They are affording a rich material for selection and improvement, but do not lead to constant varieties. Their main example is the improvement of sugar-beets. Mutations, on the other hand, are saltatory changes, which at once give birth to new and constant forms. These, if kept free from the contamination by pollen of the parent species, do not revert to it, and do not need any further selection. Usually, they are even so uniform, that they do not afford the material for such selection. Fluctuations never fail, and any large set of seedlings of a common origin will show them. But mutations are rare, and, as a rule, occur only from time to time. Their products, however, will multiply and keep their standing during successive generations, at least wherever the new characters are of a useful or harmless nature. In this way the number of mutated types within a given species or variety may increase in the lapse of time, even until the old form becomes changed into a group of more or less numerous mutative units. Numerous wild species have been recognized of late in this condition, and almost all the prominent agricultural crops comply with this rule. Varieties, as they are called, of cereals, of corn, of clover and of many other plants are seen to be multiform, each of them comprising a larger or smaller number of well-defined forms. These units, when isolated, prove uniform and constant, and afford material for selection quite different from that afforded by the fluctuating variability.

In this discussion I am not concerned with artificial hybridizations and hybrids. They are only exceptionally of prominent value in the production of such varieties as are usually propagated from seed. Natural hybridizations on the other hand, are occurring in the fields more frequently than is generally assumed, and have a distinct influence on the practical significance of mutability. It is easy to understand this. As soon as nature has produced in a field, a new type which is distinguished from the main sort by some distinct character, this new character can be transferred by accidental crosses on other constituents of the variety, and, in the long run, perhaps, on all of them. By this means the new quality will be combined with all of the types already existing within the variety, and a series of new forms will be produced. It is easily seen that a single mutation, by means of such crosses, may be the beginning of a number of new elementary forms, some of which may have useful and others indifferent characters. This is the process by which the present state of multiformity of most of our agricultural varieties has originated according to the theory of mutation and according to the facts discovered at Svalöf, which now so plainly support this view.

I have cited the selection of the sugar-beets as an instance of utilizing fluctuating variability. Setting aside the initial choice of this race by Louis Vilmorin, concerning which no historical dates have been recorded, this selection is exclusively concerned with qualities which are always varying, and which, as far as they have been studied, follow the ordinary laws of fluctuating variability, first discovered by Quetelet for men, and since applied to the animal and vegetable kingdoms by Galton and others. The form and branching of the roots, the character of the foliage, and mainly the sugar-percentage, are the points which have to be improved by selection. The range of the

variability increases in a corresponding degree with the number of specimens investigated, and nowadays the selection is usually made out of some hundred thousands of individuals whose sugar-percentage has been determined by polarization. Out of these numbers some few of the very best are chosen yearly and only by means of this very sharp selection the races can be kept up to their present high standard. Discontinuing the selection would mean to allow the race to return to its former comparatively poor condition, and no intelligent farmer would sow such seeds. More than thirty generations have improved the beets, but there is not the least sign that this improvement should have led to the production of constant and independent races. The capacity of producing more sugar cannot be enforced upon the race, and the only work of the breeder is to select, in each generation, those individuals which, from the unknown influence of environmental conditions, seem to him the most apt to give a progeny which will, temporarily, yield a rich harvest of sugar.

Contrasting with this process of selecting sugar-beets is the work of the horticulturists in producing new varieties of seed-plants. As already mentioned, I am not concerned here with artificial hybridization, which, in the field of horticulture, mainly produces varieties which must be propagated in the vegetative way in order to remain constant. In vegetables and garden flowers new varieties, as a rule, arise suddenly, and historical records are at hand which give the origin for a considerable number of them. Every year the catalogues of the prominent nurseries bring some novelties. These are all produced by leaps and are, from their first appearance, isolated and subjected to the process of selection in order to "fix" them, as the phrase goes. This "fixing," however, is only a purifying from foreign admixtures, which usually are the consequence of the partial pollination of the first mutants

by their neighbors, since it is, as a rule, impossible, or at least hazardous, to isolate the mutants themselves by transplanting them to a distant spot. It requires four or five or more years, according to the fertility of the species. There is no such thing as a theoretical fixing of initially unfixed characters, and whenever the isolation is performed by scientific methods, insuring complete self-fertilization, the new race is, at once, found constant and in no need of "fixing.".

In nature new species originate in the same way, at least as far as our present limited knowledge goes. I have had the privilege of cultivating in my experiment garden, a species which was then in a mutative condition. It is the large-flowered evening primrose, or evening primrose of Lamarck. It has produced about a dozen new species and is repeating the same process of mutability, now, in numerous gardens of the United States and elsewhere. The new types spring from it by leaps and laterally; they are, as a rule, constant from the very beginning, the only condition being that the flowers of the first mutant are artificially kept free from visiting insects and purely fertilized. No preparatory changes and no intermediates are observed, and the mutations are always complete, never producing half-way steps which must be repeated in order to reach the full mutation. They do not need any guidance or any help, they cannot be improved or fixed, since from their very first appearance they are a pure, new type. Moreover, they are constant from seed, never reverting to the parental type, but subjected, like this, to progressive mutations. Some of them excel the evening primrose of Lamarck by distinct qualities, others are weaker, or deficient in some point. If they had originated in a nursery and not in an experimental garden, the latter would have been thrown away and only the stout, profusely flowering

types, and perhaps the dwarfish variety, would have been selected for multiplication and introduction into trade.

The experiments at the above-named Swedish experiment station lead to the conclusion that among cereals and other large agricultural crops new types arise in the same way as in horticulture and in experimental work. Moreover, they show that the process of slow and gradual improvement of races is only an imaginary one. There is no doubt that by continued selection excellent races have been produced and can still be secured. But this, in itself, is no proof of slow improvement, as we shall soon see.

At Svalöf this method of repeated selection was followed in the beginning, because it was then the prevailing method among European breeders. It is now twenty years since the station was founded, and during the first period of its work, embracing about five years, a great number of varieties of cereals were subjected to this selection. The result has been the same which, as a fact, was the result of this kind of breeding in Germany, but which had never clearly been pointed out. Some few varieties could be improved and yielded excellent new types, of which some have since been introduced into Swedish agriculture and are now prominent races in the southern and middle parts of that country. But by far the larger number of the experiments yielded no results at all and the most striking among them were those with the Chevalier barley which, in Middle Sweden, is a fine brewers' barley, but exposed to failures during unfavorable summers on account of its slender stems. No amount of care, no endurance, no treatment and no selection were able to secure firmer stems in this barley, and since this was the improvement which the Swedish farmers desired above all, the whole method of continuous selection necessarily fell into discredit. Good results were exceptions, and therefore the principle was not one that could be relied upon. The idea suggested

itself that those exceptions might be due to wholly different and accidentally active causes and that it would be better to seek for these causes than to continue a method of such doubtful significance.

In order to discover these suspected causes, selection experiments were started anew and on a large scale. About a thousand samples were chosen in the grain fields of the station, each comprising a certain number of ears which were estimated to differ from the main type of their variety in the same valuable quality. Each sample was sowed separately and the next summer the lots could be compared with one another. It was hoped that each lot would be uniform and different from the others. Nothing of the kind, however, was seen, with only some few exceptions. All the lots were apparently as variable as the variety from which they had been chosen and only these few were really uniform. Exact records had been kept concerning the chosen samples and, especially, the number of ears had been entered for each. This excellent book-keeping led to the discovery of the fact that only those lots were really uniform on which only the kernels of one single ear had been sown. Hence the conclusion that the mixture of ears of apparently similar characters was a principal fault of the prevailing method. No similarity can be relied upon and only the progeny can decide concerning purity and agricultural value.

As soon as this fact was discovered, it was elevated to the rank of a leading principle and tested on as large a scale as possible. Again, a thousand samples were chosen in the field, but this time each sample consisted of one ear only. The kernels of each ear were sown separately, and the next year the result surpassed the highest expectations. Instead of a hopeless multiformity, uniformity now prevailed. With some few exceptions each lot was uniform. Of course, there were fluctuating differ-

ences. But these proved to be very small, so small as not to afford any material for further selection or even to justify a desire for purification. The exceptions have since been proven to have been caused by the accidental choice of hybrid ears. Leaving these aside, the result was that the progeny of single ears is pure but that of mixed ears impure, and all subsequent experiments have absolutely justified this conclusion. In this way, by single-ear-selection, as it is called, at once numerous new races can be isolated from the ordinary variable or rather multiform varieties.

Once isolated, such single-parent races are constant from seed and remain true to their type. They can be multiplied without further selection and, therefore, very rapidly. Some five or six years are, as a rule, sufficient to produce from one chosen initial individual the whole quantity required for advantageous introduction into agriculture at large. It is, however, manifest that not all the isolated races will be real improvements. Hence it follows that they have to be compared with one another and with the existing varieties, in order to find out which among them are the very best. This work has been found to be far more difficult and time-consuming than the initial selection and is now to be considered as the chief task of the station at Svalöf and of all breeders who will work along the same lines. On the other hand, it has been proved that the variability among these isolated races is so great and goes on in so many different directions as to comply with almost all the desires of the breeders. The experiment fields of the station can be said to be an exhibit on which each farmer can find and choose exactly the varieties which will be suitable for his farm and his industrial needs. Even a stiff-halmed barley was among the first products of this new method; it is now known as Primus barley and largely grown all over the middle part of Sweden.

In this way single-ear selection and separate culture is, now, the principle of all plant-breeding at Svalöf. It is the same idea which has been applied by W. M. Hays at the State Experiment Station of Minnesota to the improvement of the local wheats, Fife and Blue Stem, of that State, and which there has given such remarkable results. But at Svalöf the works rests on so broad an experimental basis, that all the details of the method have been thoroughly cleared up, and that it may be applied to any other agricultural crop with full confidence in its success.

Moreover, it gives a very simple answer to the question as to the cause of the exceptional results secured by repeated selection. These start from samples of ears, as is the custom in Germany and elsewhere. Each ear, if sown separately, would have given a uniform progeny; mixed together they give a mixed progeny. Out of this mixture the continued selection will first eliminate some of the strains, and then gradually restrict the number, until, at last, only the progeny of one of the initially chosen ears remains. Then the race will be as pure and constant as it will be excellent. But it is evident that quite the same result could have been obtained without the repetition of the selection, if only the kernels of each initial ear had been sown separately.

Of course the principle applies to the breeding of corn as well. Here the newly introduced method of selection chooses and separates the ears, and compares their progeny after separate sowing. The principle would be exactly the same and at once yield the same uniform and constant races as at Svalöf, were it not for the wind-pollination of the species. No repeated selection would be needed in order to obtain constant races, nor would it be even possible but for the elimination of the contaminating effects of natural cross-fertilization. Hence we may conclude that the now prevailing method of continued selection has,

as a fact, nothing to do with real improvement, but has only to improve the races by purifying them from vicinistic impurities. The selection of the best ears for seed-corn is quite another question, since it does not affect the race-production, but has simply to eliminate the ears which, through fluctuating variability, least comply with the demands of the planting machine or the planter which can plant regularly only when the seeds are uniform in size and shape. It has also to eliminate the ears of insufficient vitality and of some other inferior qualities. If a method could be found to select corn-ears on the paternal side, as well as on the maternal, all repeated selection would probably be superfluous in the building of new races.

I have indulged in these suggestions only to show the wide applicability and the probably high value of the principle of one year selection without repetition. In numerous cases it will simplify and shorten the work of the breeder. But it excels the current views mainly in as much as it gives a truer and clearer conception of the variability of agricultural plants, and thus will soon become a rich source of methodical improvements in all plant-breeding.

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A SCIENTIFIC VIEW OF HUMAN CHOICE, ETC.

a. THE UNIVERSALITY OF MOTION.

THE object of this article is to show that human choice is essentially due to natural influences, and that the properties of the substances of which our bodies are composed and those of the bodies by which we are surrounded, are largely, if not wholly, the causes of our conduct; or more precisely stated, to show by means of natural facts, that the fundamental cause of human choice is the universal motion which pervades all bodies and all space. and which we are unable either to create or destroy. The universal existence of this never-ceasing motion of masses has been abundantly proved by astronomers; and the incessant motion of molecules, of which all bodies are composed. has been sufficiently shown by the experimental labors of numerous physicists, chemists, spectroscopists, etc.—the substance radium is a conspicuous example of this self-contained motion.

As the subject of human conduct is a complex one, this article requires careful reading; its great complexity is abundantly shown by the arguments used in legal trials on moral subjects. In order to arrive at the most perfect truth in any question, and especially in a complex one, we must take the widest view of it, and this can only be done by first acquiring the most comprehensive and suitable knowledge and experience respecting it. The widest view is the scientific one, the narrow is the ordinary one, and

each varies in width with the knowledge, experience, and reasoning-power of the inquirer; "what can we reason from but what we know?" It is largely in consequence of deficiency of suitable knowledge and experience that erroneous views arise. A man may be able in one part of science, and yet be unable to take a wide scientific view of the phenomena of human choice. There are all degrees of width of view of a subject, ranging from the two extremes of greatest knowledge and greatest ignorance, and our widest view is still a very incomplete one in consequence of the comparatively limited knowledge even of the most learned men. The total amount of evidence in proof of the truth of the chief principles of science is already vastly larger than the brain of any man can contain;—nevertheless, if we possess sufficient knowledge of the sciences, we must conclude that the attribute of choice is a common property of all bodies.

Many years ago the philosopher Hobbes suggested universal motion as a cause of human conduct, but this could not be proved until such motion was itself discovered;—we now know that every substance is continually moving through space and that its molecules are always in motion. It is evident that as our brains have only limited powers, we cannot absolutely prove the universality or the complete indestructibility of motion, and we have to be content with their immense probability. He who waits for absolute knowledge must in nearly all cases wait forever. As the evidence in support of the universality of natural causation and the indestructibility of motion is vast, and as these principles have never been clearly disproved, I venture to treat them as absolute in this article, and to employ them as a basis of reasoning in all cases.

That the human organism is subject to the laws and principles of all the sciences does not admit of rational doubt. The same great powers which govern inanimate

bodies govern us, and determine and limit our power of choice; our abode upon this globe is determined, not by our volition but by the power of gravity. Universal natural causation and indestructibility of motion imply universal compulsion and unceasing action;—in accordance with these principles, all bodies, human beings included, act and react upon each other by their own incessant energy, and their behavior and differences of behavior may be attributed to their movements and differences of movement. Every different metal and compound has different properties and yields a different spectrum, and we know by these differences of their spectra that each has a different group of internal movements; we know also that their properties and spectra are simultaneously affected by change of temperature, so that these attributes in them are intimately connected together. Change of motion frequently involves change of property; even the mere change of visible motion of a body is attended by change of behavior, thus rapid longitudinal movement of a chain imparts to it rigidity and power of resistance to bending; the difference of property of a gyroscope when at rest and when in motion is another example, whilst in motion it resists being twisted. That the chief principles of mechanics pervade human actions is certain, the fact that "a body in a state of motion tends to continue in that state of motion" is as true of man as it is of the worlds in space; it is illustrated by "the force of habit" in us, and by the difficulty we experience in altering our course of conduct, or of obliterating our early impressions. All bodies, ourselves included, resist change under certain conditions, and yield to it under certain others; thus "an old dog cannot be taught new tricks" but a young one can; the condition of age affects the result.

b. GENERAL NATURE OF CHOICE.

Choice is an act of selection, a taking, accepting, or rejecting one thing or course of action in preference to another; it occurs both in dead and living bodies, and like all other properties and actions, it is subject to natural laws and is limited by opposing influences. Every material body during movement chooses the path of least resistance; and it is useless for any man to choose a course of conduct in any case in which the resistance is too great or his power too small. Choice is not necessarily a personal matter, it occurs in dead substances, in man it is often a result of feeling, and occasionally of comparison and inference. All parts of our body are nearly always choosing and rejecting, bone chooses the material for bone, and muscle for muscle, and rejects all others. The great bulk of our acts of choice and rejection occur without our noticing them, and though myriads occur continually we feel very few of them; they are more numerous during our waking state than during sleep, because we are then more active. Choice in us and other animals is largely a cerebral and nervous action, when we choose, either consciously or unconsciously, nerve-substance moves; when choice happens either in dead or living bodies, the molecules move. Similar to all inanimate substances, we obey the law of action and reaction; bodily change produces choice, and by reaction choice produces bodily change; thus if we feel too warm the heat compels us to choose and move to a cooler place.

The attributes of choice and guidance are manifested in the phenomena of astronomical movements, magnetic action, electrolysis, crystal-formation, chemical union, plant-life, etc. Thus the sun guides the planets; the planets guide their satellites; the earth guides meteors and other falling bodies, and each guided body reacts upon its guiding one in a similar manner. A magnet selects particles

of iron from metallic mixtures, and guides pieces of iron moving near it; the magnet moves the iron, and the iron reacts upon and moves the magnet. If a piece of zinc is immersed in a suitable solution of mixed salts of zinc iron, tin, copper, silver and gold, it first selects and guides the gold, and afterwards the silver and copper, to form a metallic precipitate. Similar acts of choice and rejection occur in the processes of electro-gilding, silvering, coppering, and in the electrolytic refining of copper, and we thus obtain purer metals. In the formation of pure crystals of substances from impure liquids, each crystal, during its growth, selects and determines, each to its proper place on its surface, myriads of suitable molecules which go to form its substance. Similar acts of selection, rejection and guidance happen during the formation of ice from impure water, and the ice is purer than the water. In case of chemical union in mixed solutions, an acid usually selects the strongest bases first. Plants have similar powers, thus they prefer soil which contains moisture, many will only grow in the light, a few only in the dark, some will only grow where there is common salt, and others where there is zinc in the soil, "fungi in general prefer decaying animal matter":—plants also act and react upon each other and upon us.

In all these cases, and in a multitude of others, both dead and living bodies choose, reject, guide, and control without the aid of an occult personal ego or being to superintend the process, and there is no sufficient evidence to prove that human brains do not: nevertheless, erroneous ideas to the contrary form a necessary preliminary to true ones in the evolution of mankind, and this so far justifies the existence and persistence of error and untruth. That acts of choice or self-guidance are not proofs of the existence of life, consciousness, volition, "free-will," or intellect, in the body that chooses or guides, is further

shown by the circumstance that there are self-regulating clocks, watches, musical boxes, gas-regulators, water-regulators, watchmen's tell-tales, money-recorders, governors of steam-engines, etc., all depending essentially upon the automatic action of natural energy.

It is not sufficiently recognized that we derive our properties and abilities largely from inanimate substances, and that the fundamental rudiments of human conduct, including the ability of choice and self-guidance, can be traced downwards from man through the lower animals and plants, and be detected in minerals and metals; thus, under the influence of light and heat, grass is formed from earth, carbonic acid, air, and water:—under that of hunger, sheep and cows are formed chiefly from grass: and under the same imperative influence, we are formed largely from wheat, water, beef, and mutton. This is a crude outline of the process of conversion of earth, air, and water, together with more or less of their properties, into man and his abilities. Inanimate substances still retain their fundamental properties, and are not destroyed, when they enter into the composition of living plants or animals, oxygen still remains oxygen, and nitrogen continues to be nitrogen, when they become part of the human body; the property of weight is quite unaltered, an ounce of water still weighs an ounce after we have drunk it; common salt in our blood still retains its characteristic property of producing a white precipitate in a solution of a salt of silver; the combustible substance carbon contained in our tissues still has the power of uniting with oxygen, and produces bodily heat; solutions of silver, taken internally as medicines, color the human skin on exposure to light as they do a photographic surface. These examples are sufficient to show that the properties, even of metals and other inorganic substances, are to some extent transmissible to and inherited by man.

An act of choice is essentially the same whether it occurs in a metal, a mineral, a plant, or a man, because it is an act of motion; it is however modified more or less in every different body, evidently by the differences of property of the material structures in which it takes place; thus a magnet chooses iron; and a man would choose meat and money whilst a horse would prefer hay and water. When it occurs in a metal or mineral we call it a molecular action, when in a live plant it is a vital phenomenon, and when in a conscious animal it is largely a nervous action; in man it is further in some cases an intellectual change, because each man is more or less governed and guided by his own arguments. In all animals and plants it is also partly a chemical and physiological movement.

c. THE COMPULSORY AND AUTOMATIC NATURE OF CHOICE.

The compulsory and automatic nature of choice fully agrees with the chief principles of science and the facts of experience: choice is both compulsory and free; we are compelled to choose by omnipotent energy, and are free in our choice within certain limits; this explains the seeming contradiction of free-will and compulsion. Universal energy, acting under suitable conditions, compels us to accept, and under opposite conditions compels us to reject; and in each case compels us to obey. We are as truly compelled to move as the planets in their orbits, and to choose as we are to exist; probably every action in our body is one of compulsory choice or rejection by the respective organs; we know that nearly every step in life is an unavoidable choice between two or more alternatives, and each selection is determined for us by the strongest influence. We are not only compelled to choose and reject by universal energy acting upon us, but also to accept more or less, the consequences of our acts, whether they are

painful or not. We are unceasingly coerced in a multitude of ways, often in opposition to our wishes, and we may rationally conclude that something determines the issue for us whether we perceive it or not. We are compelled by our feelings when we consider it a pleasure or advantage to us, and often by our intellect or other influence when it is prospectively painful or we are unwilling; but in many cases, from a variety of circumstances, we are unable to detect the real cause of our conduct.

Automatic acts of choice and guidance occur throughout the human body; our very life depends upon the production of heat by the spontaneously selective oxidation of our tissues by the oxygen contained in the blood. The various solids and liquids necessary to maintain life, are selected from the food and blood by the spontaneous energy of the various organs, and each different material is automatically guided to its appropriate place; thus nerve selects and guides the material for nerve, and brain that for brain. Nearly all the organs of the animal body also act and react upon each other through the nerves, and, so far as we know, the automatic action of choosing and rejecting attains its highest degree of complexity and completeness in human nerve-substance. Many of our acts of choice and determination *seem* due to some occult spiritual agency, but they only appear so because of our very limited knowledge and ability, we cannot usually perform them and simultaneously watch our performance.

By deeply studying such questions in a scientific manner we are repeatedly brought to the conclusion that the human brain is extremely weak in complex subjects, and that it would require one vastly larger to contain all the knowledge necessary to completely answer complex questions. In consequence of limited power and other circumstances, even conscious automatic action in living creatures does not always select that course which is most conducive

to life: thus all animals make mistakes and suffer acc
dents; even men occasionally poison themselves inadve
tently, and the number of errors they commit is extreme
great.

In the order of natural evolution of human abilitie
automatic choice precedes conscious choice, and becom
the latter when perceived by the senses and compared
the intellect; conscious choice therefore is not an act
creation.

d. CHANGES OF ENERGY IN ACTS OF CHOICE AND GUIDANC

Cerebral guidance is an act of change, an alterati
of one action or movement by another. Changes of e
ergy are continually happening in all bodies concurrent
with alterations of temperature, pressure, contact or pre
ence, etc. of other bodies. Multitudes of such changes a
continually occurring in the human body and brain duri
acts of thought, choice and guidance, and are accompani
by chemical oxidation of nerve-substance and the produ
tion and loss of heat. The various forms of natural energ
such as heat, light, magnetism, electricity, chemical pow
etc., whether in living men or in dead substances, are m
tually convertible, when one form is expended another
produced, and during the change a portion is usually d
fused away and lost. Longitudinal motion is chang
into circular by the ordinary crank and piston rod, whi
a portion of the energy is converted into heat by the fr
tion and is lost. When the molecular motion of heat is co
verted into motion of mass by a steam engine, more th
eighty per cent. of the original energy of the coal is dis
pated. In the dynamo, motion of mass is converted i
electric current, and partly into heat which is lost.
magnet loses magnetic energy when it attracts and guid
a piece of iron to itself, and regains the energy when

iron is pulled away. A crystal, whilst passing from the liquid to the solid state during its acts of choice and guidance, nearly always loses heat, and in some cases light. When a railway train passes round a curve, friction, heat, and sparks are produced, and the velocity of the train is diminished; on each great line of railway quite a large weight of iron is ground off the rails and wheels each day by the energy expended during guidance of the vehicles.

Not only are choice, guidance, and control, acts of conversion of motion, but they are also intimately related to storage and expenditure of energy.

The demand and supply of power are each in nearly all bodies very variable; in a man the demand is great during the day and small during the night; without an accumulation of it in a latent or potential state he cannot choose or "make up his mind," and without a storage of cerebral impressions in the form of memory he lacks power of self-guidance. In the human body energy is stored up in the blood and tissues during rest, and expended during activity;—in a watch it is accumulated in the spring during winding; and in a steam engine it is stored up in the moving fly-wheel.

G. GORE.

BIRMINGHAM, ENGLAND.

FRIEDRICH NIETZSCHE.

AMONG all modern philosophers there is perhaps no one who exerts a greater fascination upon large masses of people than Friedrich Nietzsche. The most remarkable instance of the power which he is apt to exercise upon certain minds within the range of my own experience is the case of a young clergyman who confessed to me that after a perusal of *Thus Spake Zarathustra* he had felt as if intoxicated for several months by the idea of the sovereignty of his own will; and we ask, What is the reason of this powerful influence of an author who is properly speaking neither a philosopher nor a poet, but a combination of the two—an erratic thinker of immature thoughts?

There are several reasons which make Nietzsche attractive to a certain class of people. First of all his style is pointed, and secondly he appeals, not to the intellect, but to sentiment, to passions, to our ambition, and to our vanity—all of which is human, too human, *menschlich und allzu menschlich*. His ideas, expressed in aphorisms, are easily understood. They are not presented in a logical, orderly way, but sound like reiterated challenges to do battle. They are appeals to all wild impulses and a clamor for the right of self-assertion. Thus Nietzsche appeals to the pride of sovereignty, of irresponsibility, of absolute independence. No order should be respected, no God, no superior, no law, not even logic, or truth. Nietzsche pro-

claims the coming of the "overman," but his overman* is not superior by intellect, wisdom, or nobility of character, but by vigor, by strength, by an unbending desire for power and an unscrupulous determination. The blond barbarian of the north who tramples under foot the citizens of Greece and Rome, Napoleon I, and the Assyrian conqueror,—such are his heroes in whom this higher manhood formerly manifested itself.

Other philosophers have claimed that rights imply duties and duties, rights. Nietzsche knows of rights only. Duties are for slaves and for fools.

Nietzsche passed through three periods in his development. He was first a follower of Schopenhauer and an admirer of Wagner, but he shattered his idols and became a convert to Auguste Comte's positivism. His main desire was to realize the real life and make his home not in an imaginary Utopia but in this actual world of ours. He blamed the philosophers as well as the religious leaders and ethical teachers for trying to make mankind believe that the real world is purely phenomenal, that they replace it by the world of thought which they called "the true world" or the world of truth. To Nietzsche the typical philosopher is Plato. He and all his followers are accused of hypocrisy for making people believe that "the true world" of their own fiction is real and that man's ambition should be to attain to this "true world" (the world of philosophy, of science, of art, of ethical ideals) built above the real world. Nietzsche means to shatter all the idols of the past, and he has come to the conclusion that even scientists were guilty of the same fault. They erected a world of thought, of subjective conception from the materials of the real world, and so he denounces even their attempts at constructing a "true world" as either a self-

*We prefer the purely Saxon "overman" to the barbaric combination of "superman" in which Latin and Saxon are mixed against one of the main rules for the construction of words.

mystification or a lie. It is as imaginary as the world of the priest. In order to lead a life worthy of the overman, we should assert ourselves and feel no longer hampered by rules of conduct or bored by logic or any consideration of truth.

Such in brief is the gospel of Nietzsche which, however, is not intended for the mass of mankind, but only for the elect few, for his disciples. The mass of mankind are to be enslaved and become subservient to the overman, the representative of Nietzsche's philosophy. This view constitutes his third period, in which he wrote those works that are peculiarly characteristic of his own philosophy.

Nietzsche had learned from Schopenhauer that this world is a world of misery and struggle, but he did not accept Schopenhauer's theory of the negation of the will. He retained Schopenhauer's contempt for previous philosophers (presumably he never tried to understand them) yet he resented the thought of a negation of life and replaced it by a most emphatic assertion.

Nietzsche argued that our conception of truth and our ideal world is but a phantasmagoria, and the picture of the universe in our consciousness a distorted image of real life. Our pleasures and pains, too, are both transient and subjective. Accordingly it would be a gross mistake for us to exaggerate their importance. What does it matter if we endure a little more or less pain, or of what use are the pleasures in which we might indulge? The realities of life consist in power and in our dominion over the forces that dominate life. Knowledge and truth are of no use unless they become subservient to this realistic desire for power. They are mere means to an end which is the superiority of the overman.

Nietzsche is far from regarding his philosophy as timely. He was a proud and aristocratic character, spoiled from childhood by an unfaltering admiration on the part

of both his mother and sister. It was unfortunate for him that his father had died before he could influence the early years of his son through wholesome discipline. Not enjoying a vigorous constitution Nietzsche was greatly impressed with the thought that a general decadence was overshadowing mankind. The truth was that his own bodily system was subject to many ailments which hampered his full mental development. He was hungering for health, he envied the man of energy, he longed for strength and vigor, but all this was denied him, and so these very shortcomings of his own bodily strength—his own decadence—prompted in him a yearning for bodily health, for an unbounded exercise of energy, and for success. These were his dearest ideals, and his desire for power was his highest ambition. He saw in the history of human thought, the development of the notion of the true world, which to him was a mere subjective phantom, a superstition; but a reaction must set in, and he prophesied that the doom of Nihilism would sweep over the civilized world applying the torch to its temples, churches and institutions. Upon the ruins of the old world the real man, the overman, would rise and establish his own empire, an empire of unlimited power in which the herds, i. e., the common people would become subservient. The "herd animal" (so Nietzsche called any one foolish enough to recognize morality and truth) is born to obey. He is destined to be trodden underfoot by the overman who is strong and also unscrupulous enough to use the herds and govern them.

Nietzsche was by no means under the illusion that the rule of the overman would be lasting, but he took comfort in the thought that though there would be periods in which the slaves would assert themselves and establish an era of herd animals, the overman would nevertheless assert himself from time to time, and this was what he called

his "doctrine of the eternal return"—the gospel of his philosophy. The highest summit of existence is reached in those phases of the denouement of human life when the overman has full control over the herds which are driven into the field, sheared and butchered for the sole benefit of him who knows the secret that this world has no moral significance beyond being a prey to his good pleasure.

Nietzsche's favorite animals are the proud eagle and the cunning serpent, the former because it typifies aristocracy, the latter as the wisest among all creatures of the earth. It is a strange and exceptional combination, for these two animals are commonly represented as enemies. The eagle and serpent was the emblem of ancient Elis and

4266 COINS OF ANCIENT ELIS. 40

Each is worth two drachmæ. One shows on the obverse a Zeus head with a laurel wreath, the other a winged Victory.

is at present the coat-of-arms of Mexico, but in both cases the eagle is interpreted to be the conqueror of the serpent, not its friend, carrying it as his prey in his claws.

Nietzsche, feeling that his thoughts were untimely, lived in the hope of "the coming of the great day" on which his views would find recognition, and he incorporated his ideal in "Zarathustra," the great prophet of his philosophy. He looked upon the present as a rebellion against the spirit of strength and vigor; Christianity especially, and its doctrine of humility and love for the down-trodden was hateful to him. He speaks of it as a rebellion of slaves and places in the same category as the democraticism con-

stituting at present the tendency of human development which he denounces as a pseudo-civilization.

With all his hatred of religion Nietzsche was an intensely religious character, and knowing that he could not clearly see a connection between his so-called "real world" and his actual surroundings, he developed all the symptoms of religious fanaticism which characterizes religious leaders of all ages. He indulged in a mystic ecstacy, preaching it as the essential feature of his philosophy, and his Dionysiac enthusiasm is not the least of the intoxicants which are contained in his thought and bring so many poetical and talented but immature minds under his control.

It is obvious that "the real world" of Nietzsche is more unreal than "the true world" of philosophy and of religion which he denounces as fictitious, but he was too naive and philosophically crude to see this. Nietzsche's "real world" was his personal imagination, while the true world of science is at least a thought-construction of the world which pictures facts with objective exactness; it is controlled by experience and can be utilized in practical life; it is subject to criticism and its propositions are being constantly tested either to be refuted or verified. Nietzsche's "real world" is the hope (and perhaps not even a desirable hope) of a feverish brain whose action is influenced by a decadent body.

Nietzsche's so-called "real world" is one ideal among many others. It is as much subjective as the ideals of other mortals,—of men who seek happiness in wealth, or in pleasures, or in fame, or in scholarship, or in a religious life—all of them imagine that the world of their thoughts is real and the goal which they endeavor to reach is the only thing that possesses genuine worth. In Nietzsche's opinion all were dreamers catching shadows, but the shadow of his own fancy appeared to him as real.

Nietzsche's hope is certainly not desirable for the mass

of mankind, but even the fate of the overman himself would appear as little enviable a condition as that of the tyrant Dionysius under the sword of Damocles, or the Czar of Russia living in constant fear of the anarchistic bomb.

In spite of Nietzsche's hunger for the realities of life, that is to say for objectivity, he was the most subjective of all philosophers—so much so that he was incapable of formulating any thought as an objectively precise statement. All his writings are aphoristic statements; they are but very loosely connected, and we find them frequently contradictory. The decadence which he imputes to mankind is a mere reflection of his own state of mind, and the strength which he praises is that quality in which he is most sorely lacking. Nietzsche himself had the least possible connection with active life. He was unmarried, had no children, nor any interests beyond his ambition, and having served as professor of the classical languages for some time at the small university of Basel, he was for the greater part of his life without a calling, without duties, without aims. He never ventured to put his own theories into practice. He did not even try to rise as a prophet of his own philosophy, and remained in isolation to the very end of his life.

Nietzsche must have felt the contradiction between his theories and his habits of life, and it appears that he suffered under it more than can be estimated by an impartial reader of his books. He was like the bird in the cage who sings of liberty, or an apoplectic patient who dreams of deeds of valor as a knight in tournament or as a wrestler in the prize ring. Never was craving for power more closely united with impotence!

It is characteristic of him that he said, "If there were a God, how should I endure not to be God?" and so his ambition impelled him at least to prophesy the coming of his ideal, i. e., robust health, full of bodily vigor and animal

spirits, unchecked by any rule of morality, and an unstinted use of power.

Nietzsche had an exaggerated conception of his vocation and he saw in himself the mouthpiece of that grandest and deepest truth, viz., that man should dare to be himself without any regard of morality or consideration for his fellow beings. And here we have the tragic element of his life. Nietzsche, the atheist, deemed himself a God incarnate, and the despiser of the Crucified suffered a martyr's fate in offering his own life to the cause of his hope. The earnestness with which he preached his wild and untenable doctrines appeals to us and renders his figure sympathetic, which otherwise would be grotesque. Think of a man who in his megalomania preaches a doctrine that justifies an irresponsible desire for power! Would he not be ridiculous in his impotence to actualize his dream? and on the other hand, if he were strong enough to practice what he preached, if like another Napoleon, he would make true his dreams of enslaving the world, would not mankind in self-defence soon rise in rebellion and treat him as a criminal, rendering him and his followers incapable of doing harm? But Nietzsche's personality, weak and impotent and powerless to appear as the overman and to subjugate the world to his will, suffered excruciating pains in his soul and tormented himself to death, which came to him in the form of decadence—a softening of the brain.

It may be interesting in this connection to mention the case of an American equivalent to Nietzsche's philosophy, which so far as I know has never yet seen publicity. The writer of these lines became acquainted with a journalist who has worked out for his own satisfaction a new system of philosophy which he calls "Christian economics," the tendency of which would be to preach a kind of secret doctrine for the initiated few who would be clever enough

to avail themselves of the good opportunity. He claimed that the only thing worth while in life is the acquisition of power through the instrumentality of money. He who acquires millions can direct the destiny of mankind, and this tendency was first realized in the history of mankind in this Christian nation of ours, whose ostensible faith is Christianity. Our religion, he argues, is especially adapted to serve as a foil to protect and conceal the real issue, and so he calls his world-conception, "Christian economics." Emperors and kings are mere puppets who are exhibited to general inspection, and so are presidents and all the magistrates in office. Political government has to obey the behests of the financiers, and the most vital life of mankind resides in its economical conditions.

The inventor of this new system of "Christian economics" would allow no other valuation except that of making money, on the sole ground that science, art and the pleasures of life are nothing to man unless he is in control of power which can be had only through the magic charm of the almighty dollar.

I will not comment upon his view, but will leave it to the reader, and am here satisfied to point out its similarity to Nietzsche's philosophy. There is one point only which I will submit here for criticism and that is the principle of valuation which is a weak point with both the originator of "Christian economics" and with Friedrich Nietzsche.

Nietzsche proclaimed with great blast of trumpets, if we may so call his rhetorical display of phrases, that we need a re-valuation of all values; but the best he can *do* is to establish a standard of valuation of his own. Every man in this world attains his mode of judging values according to his character, which is formed partly of inherited tendencies, partly by education and is modified by his own reflections and experiences. There are but few persons in this world who are clearsighted enough to for-

mulate the ultimately guiding motive of their conduct. Most people follow their impulses blindly, but in all of them conduct forms a certain consistent system corresponding to their own idiosyncracy. These impulses may sometimes be contradictory, yet upon the whole they will all agree, just as leaves and blossoms, roots and branches of the same tree will naturally be formed according to the secret plan that determines the growth of the whole organism. Those who work out a specially pronounced system of moral conduct do not always agree in practical life with their own moral principle, sometimes because they wilfully misrepresent it and more frequently because their maxims of morality are such as they themselves would like to be, while their conduct is such as they actually are. Such are the conditions of life and we will call that principle which as an ultimate *raison d'être* determines the conduct of man, his standard of valuation. We will see at once that there is a different standard for each particular character.

A scientist as a rule looks at the world through the spectacles of the scientist. His estimation of other people depends entirely on their accomplishments in his own line of science. Artist, musician, or sculptor does the same. To a professional painter scarcely any other people exist except his pupils, his master, his rivals and especially art patrons. The rest of the world is as indifferent as if it did not exist; it forms the background, an indiscriminate mass upon which all other values find their setting. All the professions and vocations, and all the workers along the various lines of life are alike in that every man has his own standard of valuation.

A Napoleon or a Cæsar might have preached the doctrine that the sciences, the arts and other accomplishments are of no value if compared with the acquisition of power, but I feel sure that it would not have been much heeded by the mass of mankind, for no one would change his

standard of value. A financier might publicly declare that the only way to judge people is according to the credit they have in banking, but it would scarcely change the standard of judgment in society. Beethoven knew as well as any other of his contemporaries the value of money and the significance of power, and yet he pursued his own calling, fascinated by his love for music. The same is true not only of every genius in all the different lines of art and science, but also of religious reformers and inventors of all classes. Tom, Dick, and Harry in their hankering for pleasure and frivolous amusement are not less under the influence of the conditions under which they have been born than the great men whose names are written in the book of fame. It is difficult for every one of us to create for himself a new standard of valuation, for what Goethe says of man's destiny in a poem entitled *Daimon*, is true:

"As on the day which has begotten thee
The sun and planets stood in constellation,
Thus growest and remainest thou to be,
For 't is life's start lays down the regulation
As thou must be. Thyself thou canst not flee.
Such sibyl's is and prophet's proclamation.
For truly, neither force nor time dissolveth,
Organic form as, living, it evolveth."*

Our attitude in life depends upon our character, and the basic elements of character are the product of the circumstances that gave birth to our being. Our character enters unconsciously or consciously in the formulation of

* The original reads thus:

"Wie an dem Tag der dich der Welt verliehen,
Die Sonne stand zum Grusse der Planeten,
Bist alsobald and fort und fort gediehen
Nach dem Gesetz, wonach du angetreten.
So musst du sein, dir kannst du nicht entfliehen,
So sagten schon Sibyllen, so Propheten;
Und keine Zeit und keine Macht zerstückelt,
Geprägte Form, die lebend sich entwickelt."

So far as I know, these lines have never been translated before.

our standards of value which we will find to be the most significant factors of our destinies. Now the question arises, Is the standard of value which we set up, each one of us according to his character, purely subjective or is there any objective criterion of its worth?

We must understand that to a great extent our choice of a profession and other preferences in our occupations or valuations are naturally different according to conditions; some men are fit to be musicians, or scholars, or traders, or farmers, or manufacturers, and others are not. The same profession would not be appropriate for every one. But there is a field common to all occupations which deals with man's attitude toward his fellow beings and, in fact, toward the whole universe in general. This it is with which we are mainly concerned in our discussion of a criterion of value because it is the field occupied by religion, philosophy and ethics. Tradition has sanctioned definite views on this very subject which have been codified in certain rules of conduct different in many details in different countries according to religion, national and climatic conditions, and the type of civilization; yet after all, they agree in most remarkable and surprising coincidences in all essential points.

Nietzsche, the most radical of radicals, sets up a standard of valuation of his own, placing it in the acquisition of power, and he claims that it alone is entitled to serve as a measure for judging worth because, says he, it alone deals with that which is real in the world; yet at the same time he disdains to recognize the existence of any objective criterion of the several standards of value. If he were consistent, he ought to give the palm of highest morality to the man who succeeds best in trampling under foot his fellowmen, and he does so by calling him the overman, but he does not call him moral. To be sure this would be a novel conception of morality and would sanction what is

commonly execrated as one of the most devilish forms of immorality. Nietzsche takes morality in its accepted meaning, and so in contradiction to himself denies its justification in general.

Considering that every one carries a standard of valuation in himself we propose the question, "Is there no objective criterion of valuation, or are all valuations purely subjective?" This question means whether the constitution of the objective world in which we all live, is such as to favor a definite mode of action determined by some definite criterion of value.

We answer that subjective standards of valuation may be regarded as endorsed through experience by the course of events in the world whenever they meet with success, and thus subjective judgments become objectively justified. They are seen to be in agreement with the natural course of the world, and those who adhere to them would in the long run be rewarded by survival. Such an endorsement of standards can be determined by experience and has resulted in what is commonly called "morality." We may here take for granted that the moral valuation is a product of many millenniums and has been established, not only in one country and by one religion, nor in one kind of human society, but in perfect independence in many different countries, under the most varied conditions, and finds expression in the symbolism of the most divergent creeds. The beliefs of a Christian, of a Buddhist, of a Mussulman in Turkey, or a Taoist in the Celestial Empire, of a Parsee in Bombay, or a Japanese Shintoist, are all as unlike as they can be, but all agree as to the excellency of moral behavior which has been formulated in these different religions in sayings incorporated in their literature. We find very little if anything contradictory in their standards of valuation, and we make bold to say that if there is any objective norm for the subjective valuation of man it is

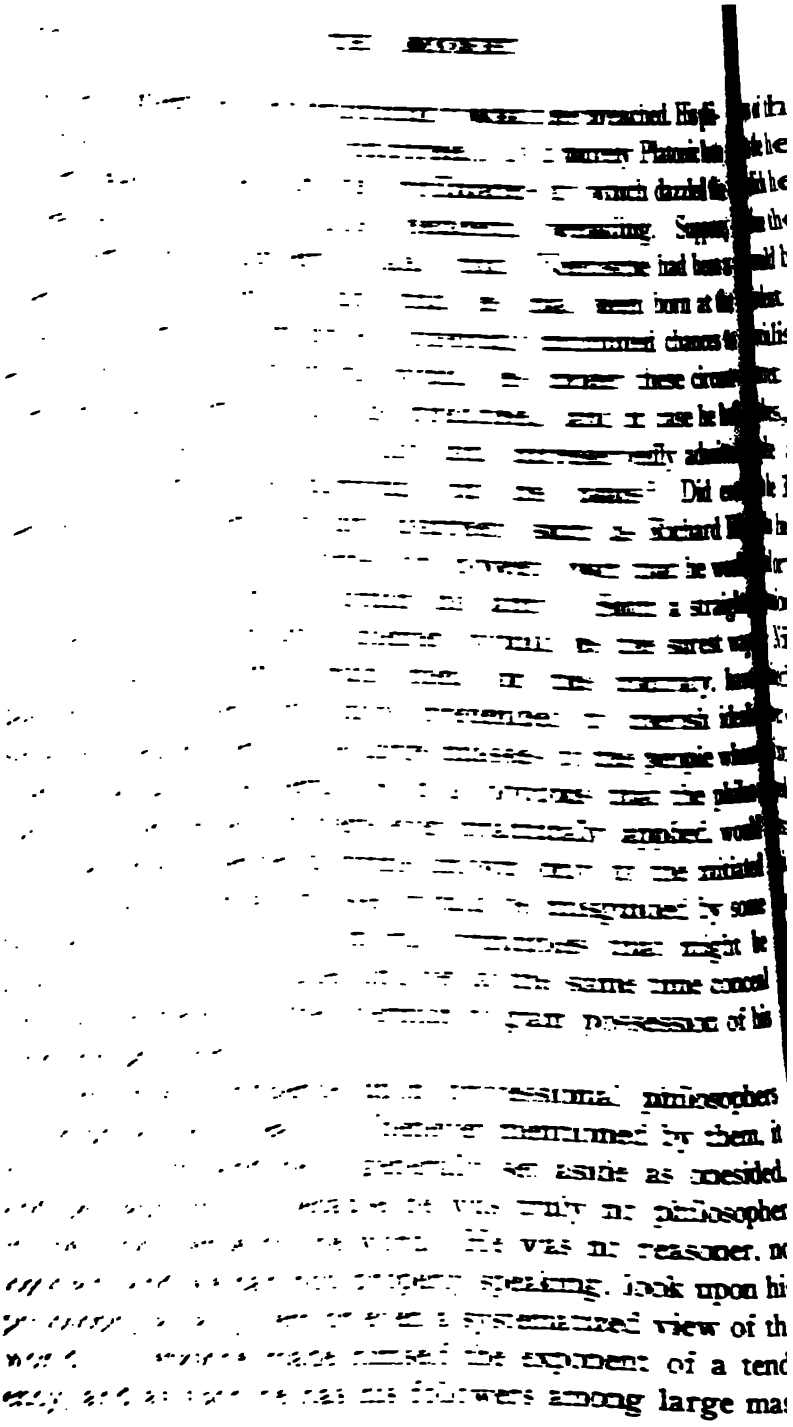
this moral consensus in which all the great religious prophets and reformers of mankind agree.

We will grant that Nietzsche's demand of a transvaluation of all values may mean to criticize the narrow doctrines and views of the religion of his surroundings. But as he expresses himself and according to his philosophical principle he goes so far as to condemn not only the husk of all these religious movements, but also their spirit. In spite of his subjectivism which denies the existence of anything ideal, and goes so far as to deny the right even of truth to have an objective value, Nietzsche establishes a new objectivism, and proposes his own, and indeed very crude, subjective standard of valuation as the only objective one worthy of consideration for the transvaluation of all values.

Nietzsche's real world, or rather what he deemed to be the real world, is a dream, the dream of a sick man, to whom nothing possesses value save the boons denied him, physical health, strength, power to dare and to do.

The transvaluation of all values which Nietzsche so confidently prophesies will not take place, at least not in the sense that Nietzsche believes. There is no reason to doubt that in the future also history will follow the old conservative line of development in which different people according to their different characters will adopt their own subjective standards, and nature, by a survival of the fittest will select those for preservation who are most in agreement with this real world in which we live, a world from which Nietzsche, according to the sickly condition of his constitution, was separated by a wide gulf. He thirsted for it in vain, and we believe that he had a wrong conception of the wealth of its possibilities and viewpoints.

It is said that barking dogs do not bite, and this being true, we must look upon Nietzsche's philosophy as a harmless display of words and a burning desire for power with-



ses of those very people whom he despised as belonging to the herds. As Nietzsche idealized this very quality in which he was lacking, so his followers recruit themselves from the ranks of those people who more than all others would be opposed to the rule of the overman. His most ardent followers are among the nihilists of Russia, the socialists and anarchists of all civilized countries. The secret reason of attraction, perhaps unknown to themselves, seems to be Nietzsche's defense of the blind impulse and the privilege which he claims for the overman to be himself in spite of law and order and morality, and also his contempt for rules, religious, philosophical, ethical or even logical, that would restrict the great sovereign passion for power.

Nietzsche claims to be the first philosopher who maintained the principle of unmorality, implying the absolute sovereignty of man and the foolishness as well as falsity of moral maxims. He insists that the overman is beyond good and evil, and yet it is obvious that he was only the first philosopher who has boldly proclaimed this principle of unmorality. His maxim (or lack of maxims) has been stealthily and secretly in use among those classes whom he calls "overmen," great and small. The great overmen are conquerors and tyrants, who meteorlike appear and disappear, the small ones are commonly characterized as the criminal classes; but there is this difference between the two, that the former, at least so far as they have succeeded, recognize the absolute necessity of establishing law and order, and though they may temporarily have infringed upon the rules of morality themselves, they have finally come always to the conclusion that in order to maintain their position they must enforce upon others the usual rules of morality.

Both Alexander and Cæsar were magnanimous at the right moment. They showed mercy to the vanquished, they

exercised justice frequently against their own personal likes or dislikes, and were by no means men of impulse as Nietzsche would have his overman be. The same is true of Napoleon whose success is mainly due to making himself subservient to the needs of his age. As soon as he assumed the highest power in France, Napoleon replaced the frivolous tone at his court, to which his first wife Josephine had been accustomed, by an observance of so-called *bourgeois* decency, and he enforced it against her inclinations and his own.

Further, Napoleon served the interests of Germany more than is commonly acknowledged by sweeping out of existence the mediæval system of innumerable sovereigns, ecclesiastical as well as secular, who in conformity with the conservative tenor of the German people had irremediably ensconced themselves in their hereditary rights to the disadvantage of the people. Moreover, the *Code Napoleon*, the new law book, perhaps the most enduring work of Napoleon, was compiled by the jurists of the time, not because Napoleon cared for justice, but because he saw that the only way of establishing a stable government was by acknowledging rules of equity and by enforcing their recognition. It is true that Napoleon made his service in the cause of right and justice a pedestal for himself, but in contrast to Nietzsche's ideas we must notice that this recognition of principle was the only way of success to a man whose natural tendency was an unbounded egotism, an unlimited desire for power.

The writings of Nietzsche will make the impression of a youthful immaturity upon any half-way serious reader. There is a hankering after originality which of necessity leads to aberrations and a sovereign contempt for the merits of the past. The world seems endangered, and yet any one who would seriously try to live up to Nietzsche's ideal must naturally sober down after a while, and we

may apply to him what Mephistopheles says of the baccalaureus:

"Yet even from him we're not in special peril
He will, ere long, to other thoughts incline.
The must may foam absurdly in the barrel,
Nathless, it turns at last to wine."

Tr. by Bayard Taylor.

Nietzsche did not live long enough to experience a period of matured thought. He died before the fermentation of his mind had come to its normal close, and so his life will remain forever a great torso, without intrinsic worth, but suggestive and appealing only to the immature, including the "herd animal" who would like to be an overman.

Nietzsche is an almost tragic figure that will live in art as a brooding thinker, a representation of the dissatisfied, a man of an insatiable love of life, with wild and unsteady looks, proud in his indomitable self-assertion, but broken in body and spirit. Such he was in his last disease when his mind was wrapt in the eternal night of dementia, the oppressive consciousness of which made him exclaim in lucid moments the pitiable complaint, *"Mutter, ich bin dumm."* As such he is represented in Klein's statue, which in its pathetic posture is a psychological masterpiece.

Nietzsche's works are poetic effusions more than philosophical expositions and yet we would hesitate to call him a poet. His poems are not poetical in the usual sense. They lack poetry and yet they appeal not only to his admirers, but also to his critics and enemies. Most of them are artificial yet they are so characteristic that they are interesting specimens of a peculiar kind of taste. They strike us as ingenious, because they reflect his eccentricities.

We expect that translations of the most important

STATUE OF NIETZSCHE. 5157

By M. Klein.

oetical effusions of Nietzsche will be welcome to our eaders.

Here is Nietzsche the man as he characterizes himself ı a poem entitled "Ecce Homo."*

"Yea, I know from whence I came!
Never satiate, like the flame
Glow I and consume me too.
Into light turns what I find,
Cinders do I leave behind,
Flame am I, 'tis surely true."

His ambition for originality is expressed in four lines, vhich we translate faithfully, preserving even the un-grammatical use of the double negative, as follows:

"In my own house do I reside,
Did never no one imitate,
And every master I deride,
Save if himself he'd derogate."

In another little poem Nietzsche imitated Goethe's fa-nous conclusion of the second part of Faust in which the 'real world" of transient things is considered as a mere ymbol of the true world of eternal verities. Nietzsche nocks Goethe's proposition, by imitating the style and hythm of his lines which we translate thus:

"The non-deciduous
Is a symbol of *thy* sense,
God ever invidious,
A poetical licence.
World-play domineeringly
Mixes semblance and fact,
And between them us sneeringly
The ever-foolish has packed."

*"Ja, ich weiss woher ich stamme!
Ungesättigt gleich der Flamme,
Glühe und verzehr ich mich,
Licht wird alles was ich fasse,
Kohle alles was ich lasse:
Flamme bin ich sicherlich!"

We conclude with another poem which is perhaps the best known of all. It appeared at the end of *Thus Spake Zarathustra*, the most impressive work of Nietzsche, and is called by him "The Drunken Song." The thoughts are

O MENSCH GIEB ACHT!
WAS SPRICHT DIE TIEFE MITTERNACHT?
„ICH SCHLIEF, ICH SCHLIEF—,
„AUS TIEFEM TRAUM BIN ICH ERWACHT:—
„DIE WELT IST TIEF,
„UND TIEFER ALS DER TAG GEDACHT.
„TIEF IST IHR WEH—,
„LUST TIEFER NOCH ALS HERZELEID:
„WEH SPRICHT: VERGEH!
„DOCH ALLE LUST WILL EWIGKEIT—,
„—WILL TIEFE, TIEFE EWIGKEIT!"
ALSO SPRACH ZARATHUSTRA
LINDLOFF

almost incoherent and it is difficult to say what is really meant by it. Nothing is more characteristic of Nietzsche's attitude and the vagueness of his fitful mode of though

It has been illustrated by Hans Lindlof, in the same spirit in which Richard Strauss has written a musical composition on the theme of Nietzsche's *Thus Spake Zarathustra.*

"The Drunken Song" reads in our translation as follows:

"Man, listen, pray!
What the deep midnight has to say:
'I lay asleep,
'But woke from dreams deep and distraught.
'The world is deep,
'E'en deeper than the day e'er thought.
'Deep's the world's pain,
'Joy deeper still than heartache burneth.
'Pain says, Life's vain!
'But for eternity Joy yearneth,
'For deep eternity Joy yearneth."*

EDITOR.

* Prof. William Benjamin Smith has translated this same song, and we think it will be interesting to our readers to compare his translation which has not yet been published elsewhere, with our rendering. It reads as follows:

"Oh Man! Give ear!
What saith the midnight deep and drear?
'From sleep, from sleep
'I woke as from a dream profound.
'The world is deep
'And deeper than the day can sound.
'Deep is its woe,—
'Joy, deeper still than heart's distress.
'Woe saith, Forego!
'But Joy wills everlastingness,—
'Wills deep, deep everlastingness.'"

A FEW HISTORICAL DATA OF THE MODERN SCIENCE OF LANGUAGE.

IN retracing the historical phases of the modern science of language, we are confronted at the outset of our survey by two singular facts: first, that the theory and the technical knowledge of language had remained stationary and unchanged from classical times to the second decade of the nineteenth century; and by the other equally startling fact, that all the achievements of the modern science of language and of comparative philology, have been accomplished within the lapse of only a few decades of the past century. It must be added that the edifice of the science of language that has been reared by the philologists of the nineteenth century, is no mere accumulation of disconnected material, but, by its basic principles, must be regarded as a complete and finished structure. Within the first decade of the present century, accordingly, it may not seem altogether inappropriate to recall to mind, first, the causes of the obstacles which so long impeded and retarded the study and the correct conception of language; and next, briefly to review the progressive stages, which, as it were, irrespective of their duration have led up to the erection of the modern science of language within the narrow space of a few decades. We shall not incur the risk of exaggerating the intrinsic value or the vast bulk of the work that has been performed. In this respect the reader may at once be referred to Prof. Theodor

Benfey's exhaustive volume, published in 1869 at Munich, Germany, and entitled: *History of the Science of Language, and of Oriental Philology in Germany.* The volume in question exclusively relates to work done in Germany by German philologists, and yet, the multitude and variety of subjects must fill us with astonishment. If we should only undertake to write down the names of all those devoted workers in the field of language and philology—in the words of an ancient Sanskrit sentence:—"soon the chalk would drop from our hand!"

That Germany, during the nineteenth century, should have produced such a prodigious number of specialists in this department of research was due to many local causes. Notwithstanding the incontestable fact that German philological scholarship received a vast supply of valuable materials from abroad—from England, France, and other countries—German philologists still may claim the modern science of language as a native German product, or as distinctly a German science.

The intrinsic hindrances to the creation of a genuine science of language have mainly arisen from the philosophical systems (particularly metaphysics and logic) which, during so many centuries, molded and warped the minds of Europe. Throughout the European middle ages theoretical philosophy had conceived the notion of an *absolute speech-form,* and, consequently, it proclaimed the absolute, substantial unity of all human languages.

On the other hand it is generally known that the theoretical philosophy of the past was generally applied to the so-called metaphysical categories—to the abstract notions of being, essence, matter, force, cause, effect, phenomenon, etc.; while logic taught the most general forms of all scientific thinking.

But this abstract philosophy of the middle ages ignored or remained indifferent to the important fact that within

the independent domain of objective reality there is found a parallel series of sciences, viz., a science of nature, and a science of the human spirit,—the science of history, or philology in the broadest sense of the term.

The science of nature and the science of the human spirit follow their own independent laws. Nature and mind do not presuppose respectively the existence of an abstract philosophy of nature, or of an abstract philosophy of history. This would only result in a conflicting dualism—the dualism of theory on the one hand, and of empirical science and of history on the other. It was this very dualism which asserted its supremacy when the abstract philosophy of the middle ages persisted in applying its own exclusive, constructive theories to the objective phenomena of reality.

This dualism was a spontaneous creation of the middle ages, harmonizing perfectly with the dogmatic and scholastic methods of the period. During the middle ages this dualism revealed itself not only in every theorizing tendency of the human mind, but even in the entire organization of social life,—in the form of an antagonizing contrast of nature and mind; of earthly existence, and of life in the beyond; of Church and State; of State and individual; of life external; and of a mystic, inward life.

Under conditions of this kind, any science of nature was impossible, because nature was ignored, and despised.

This fictitious dualism, however, had been unknown to classical Greek antiquity. I can only mention here that the technical terms which are still employed in describing the varied aspects of this dualism—terms like *"a priori," "a posteriori,"* "synthesis," "analysis," "syllogism," "induction," and so forth—all of these, certainly, were used by Aristotle, yet with this important difference, that the Greek philosopher employed these terms in a sense that was entirely different from the significance which later

was imparted to them by the scholastic philosophy of the middle ages. During the middle ages, only logic could rise to the height and dignity of a science, because the Christian dogma and system of theology found that logic proved the most serviceable hand-maid of all arbitrary constructions.

Probably every one is well acquainted with the fact that Lord Bacon, in his *Novum Organum,* was the first who attempted to combine the hair-splitting subtleties of scholastic logic with the creation of a more dignified science of nature. But we must also recall to mind that almost at the same time there arose the French philosopher, Descartes, who, starting from the principle: "*cogito, ergo sum,*" sought for certitude in the cognition of being; while being itself is supposed to result from thinking.

This meant the same as to restore the old conflicting dualism of empiricism and of theory even more pointedly than before; because, with Descartes, *a priori* no longer meant "from the cause," but "from pure thinking" unsupported by experience.

When, at a later date, Kant proposed the doctrine that experimental knowledge, in order to be possible, must be preceded by certain *a priori* cognitions, this German philosopher admittedly imparted a new impulse to philosophy; and it is well known how he himself defined and limited these categories of all our cognitions. Our experimental knowledge forms a compound combination of what we receive through our sensual impressions, and that which our innate power of cognition yields from within. As such this doctrine did not involve a dualism proper; but, nevertheless, it soon furnished an occasion for a revival of the old dualism when Hegel maintained that he had found that which Descartes had sought for, to wit, absolute certainty;—a knowledge of being that was as certain as thinking. Hegel contended that not only the abstract *a*

priori forms of our cognitions, but also the form and contents of all being, are found within the mind, and that mind itself furnishes these contents.

I have here mentioned these past philosophical systems only in order to show that in reality they were incompatible with either a correct conception of language, or with the creation of a genuine science of language.

Philosophy could only conceive language as *substance* —a "thing-in-itself" (*Ding an sich*), as it was called. But the modern science of language has proved the affinity of language with the whole evolution of humanity in history; and therewith, the genuine science of language, also, has done away with absolute methods and the *a priori* definition of language of past philosophical systems.

It is generally admitted that during the earlier decades of the nineteenth century no philologist has worked with greater energy against that philosophical conception of speech than has Dr. H. Steinthal, the late professor of the general science of language in the University of Berlin, Germany; of Old Testament interpretation at the Hebrew High School of the same city; and (together with Professor Lazarus) the editor of the German *Zeitschrift für Völkerpsychologie*. In one of his earliest works, entitled: *Die Sprachwissenschaft Wilhelm von Humboldts und die Hegelsche Philosophie,* (published in 1848), Dr. Steinthal, as interpreter and emendator of von Humboldt's philological ideas, has at the same time paved the way for a series of important works in the same line of research. Of these preparatory works I shall mention Dr. Steinthal's dissertation "On the Reciprocal Relations of Philology, History and Psychology" [*Philologie, Geschichte und Psychologie in ihren gegenseitigen Beziehungen*], delivered before the Convention of Philologists at Meissen, in the year 1863; further, his "Classification of Languages" [*Die Classification der Sprachen*]; and his "Characteristics of

the Principal Types of Language-structure" [*Characteristik der hauptsächlichsten Typen des Sprachbaues,* Berlin, 1860].

In the following remarks, in order to obtain a comprehensive survey of the historical data of the modern science of language, it will prove useful to recapitulate a few of the philological thoughts which the above works suggest to the modern student of the science of language.

Philosophy, at all times, had conceived a fictitious, *absolute* speech-form, and, hence, the *substantial unity* of all languages. From this abstract construction it followed that still in the second decade of the nineteenth century the historical grammarians had scarcely yet advanced beyond the limits which the Greeks and Romans had formerly attained. The knowledge of the historical grammarians was yet limited to the two classical languages. The classical languages were opposed to the languages of the Orient, and by these were understood only the Semitic languages, probably in deference to Old Testament literature. This narrow treatment of language, moreover, tallied with the purely external, mechanical theory of language, which also still prevailed in the second decade of the nineteenth century.

The author of this mechanical theory was Friedrich Adelung, a German scientist residing and writing in Russia. Adelung is still remembered as the author of a work entitled *Mithridates,* which he intended should be a kind of universal grammar of all languages of the globe. The classical grammar was supposed to suit the form of any national language; but even to Adelung the value of this universal grammar had no direct bearing upon the deepest problems of speech, such as the origin, nature and classification of languages. It was merely imagined to afford an external advantage, i. e., for the geographical distribution of nations; and, in harmony with the pre-

vailing philosophical systems, the author concludes that all languages are built on nearly the same plan, and that it is idle to dispute about the relative excellences of any language, because time, circumstances and civilization will improve any language. In this system there is no question of classification proper, but only of a geographical line of languages, beginning with the monosyllabic languages of Eastern Asia, and with the polysyllabic languages, extending through Central and Western Asia into Europe. Even long after Adelung's time, this is still a widely popular theory of language; and, withal, the only notion of language understood and entertained by many persons of average culture in our own day. Adelung's theory, however, could not satisfy any earnest student of language. Soon after Adelung there arose a new school of philologists, who assumed a marked antagonistic attitude toward the philosophical theories of the past. When Eichhorn proposed the genealogical grouping of languages, by including the Hebrew, with the kindred languages, there begins a new independent era of linguistic science.

This was the first step in the right direction; because the aim of modern comparative linguistics is, precisely, classification according to families and tribes of languages. Comparative linguistics of this kind, however, have their limit, and by themselves are far from sufficient; for when there has been performed the task of comparing and distributing particular languages into families of kindred tongues, these linguistic groups have yet to be characterized, according to their inward differences or diversities of form. This cannot be done through the mere proof of the affinities of these languages. The genealogical or genetic classification, nevertheless, remains the necessary basis of every attempt at a scientific classification of languages, although the genesis of languages must be rigorously kept apart from that of races and nations. From

the genesis of languages, absolutely, the origin of nations themselves can not be absolutely inferred, nor, on the other hand, does the relation of languages to ethnology represent the most important side of the science of language. Although language so long continued to be regarded as a mechanism, there appeared, as early as the first decade of the nineteenth century, a German thinker who cautiously ventured to assert that language was not merely a mechanism, but rather an *organism*. This thinker was Friedrich Schlegel. In his work: *Weisheit der Inder* ("The Wisdom of the Hindus") we find for the first time, entirely new ideas concerning the nature of language, in striking contrast with the accepted theories of the philosophers; and the Germans, accordingly, claim that with Friedrich Schlegel the modern science of language must be said to begin. Schlegel wished to classify languages, and to this end he created three main divisions: languages without inflection, agglutinative languages, and inflected languages. In the first class the particles that modify the sense stand entirely apart, i. e., they are words independent of the root. In the second (agglutinative) class, grammar is entirely made up of suffixes and prefixes, which are everywhere easily distinguishable and still preserve to some extent their original significance, such as of plural, of past or future action; and yet, these agglutinative particles have already begun to amalgamate, to coalesce with the word. Schlegel regards both these classes as inorganic and contrasts them with the third, the inflected languages, which he calls the really organic or organized class.

In Schlegel's own day these novel views signaled an important innovation in the methods of linguistic research. He had thus discovered that an enormous distance intervenes between the inflection of the Indo-European languages and the technique, or means of creating grammar,

employed by a number of other races; and he had understood that the Indo-European inflection could not be explained from any purely mechanical process. But, on the other hand, he had not attained to a clear intuition or perception of the nature of this difference. He only felt that it was the result of an inward process; but he grows vague and obscure when he seeks to explain it. Thus his conception of language assumes a mystical aspect. He maintains, for example, that in Sanskrit and in Greek each root is really what it stands for, like a living germ; but, as Dr. Steinthal remarks, to convert a mental activity into an immediate process of nature is to fall into crude mysticism.

A. W. Schlegel, Friedrich's equally distinguished brother, in his remarks on the Provençal language and literature has reproduced the aforesaid triple classification, perhaps, in a clearer form. A. W. Schlegel, within the third or inflected class, further gives an interesting sub-division which he calls synthetical and analytical languages. Synthetical languages use inflected forms where analytical languages only employ prepositions, pronouns and auxiliary verbs. The Greek and Latin are examples of the synthetical kind; while English and the languages derived from the Latin have an analytical grammar. The Teutonic languages form an intermediate class. The analytical languages have been evolved at different historical periods from the synthetical languages. A. W. Schlegel maintained that the ancient synthetical languages enjoyed a superior excellence. The highest praise that can be bestowed upon our modern languages is their perfect adaptation to the actual needs of the human mind; while the most signal advantage of the ancient classical languages consists in the much greater freedom they enjoy in the arrangement of the words within the sentence. Here, they satisfy the cravings of logic, and ensure clearness by so-

norous and accentuated inflections. Through an endless variety of phrases and by entwining words with exquisite taste, the speaker, writer, and the inspired poet, were able to impress the imagination and sensibility of others with an ever novel charm. On the other hand, the modern languages are severely bound to the rules of logic, since, while having lost the greater part of the inflections, they are compelled to designate the relations of ideas by the position, which the words occupy in the sentence. A. W. Schlegel, in conclusion, makes the following striking remarks on the synthetical languages: "They belong to another phase of the human intellect. In the synthetical languages there is revealed a more simultaneous action, and a more immediate impulse of all the faculties of the soul, than in any of our modern, analytical languages. The analytical or modern languages are controlled by reason which acts apart from the other faculties, and hence, renders a better account of their operations. I believe that in comparing the genius of antiquity with the spirit of modern times we shall discover a contrast entirely similar to that which exists between the two classes of languages. All the great creative syntheses of history were the work of a remote antiquity, while perfected analysis was reserved for modern times."

A few years later Prof. Franz Bopp successfully turned these inspired intuitions and direct perceptions of both the Schlegels into a genuine practical benefit to linguistics and philology. Professor Bopp takes Friedrich Schlegel particularly to task for his contradictions, mysticism, and, above all, for his lack of historical, *technical* knowledge of languages. Professor Bopp, in principle, readily admits Schlegel's conception of language as organism; and, as well, the scientific value of a natural classification such as Schlegel had aimed at; but thereupon Bopp himself in his monumental work, *A Comparative Grammar of*

the Indo-European Languages, furnishes an essentially modified classification: "First," he says "there are languages with *monosyllabic roots, devoid of any capacity of composition,* and hence, without organism and without grammar. To these belongs the Chinese, in which everything is still the naked root, and in which the grammatical categories, and all collateral relations, are mainly understood from the position of the roots in the sentence. Secondly: *Monosyllabic languages which are capable of composition* and which by this means almost entirely obtain their organism, their grammar. To these belong languages that have an affinity with Sanskrit, and all other languages not belonging to the first class, except the Semitic languages. The *Semitic* languages, apart, form the third class. The Semitic languages create their grammatical forms not only through composition, like the second class, but also by means of *a purely inward* modification of the roots."

From this classification it will be seen that Professor Bopp starts from the *technique* of language, that is, from the *means* by the aid of which language creates grammar, and employs it for the designation of the categories. This technical point of view henceforth constitutes the essential element which must be taken into consideration in all attempts at classification of languages. It is to Prof. Franz Bopp's enduring honor that he created the modern *historical grammar.* His linguistic and philological work has, of course, been extended and perfected by a host of later scholars; but, in the principle which pervades and controls his methods, Franz Bopp can scarcely be superseded. To the historical grammarians, accordingly, belongs the credit of having performed the main bulk of all the linguistic and philological work of the nineteenth century. From this time, the valuable creations of the modern science of language have been poured forth, every year of the cen-

tury. The true principle of linguistic research having once been discovered, the progressive advance of the science of language was no longer dependent on the duration of time. In order to obtain a survey (if only superficially) of that prodigious intellectual activity, it will suffice to glance at European linguistic catalogues, like Trübner's *Bibliotheca Sanscrita,* exclusively relating to the department of Sanskrit literature; or to turn over the leaves of such German philological reviews as the *Zeitschrift für die Kunde des Morgenlandes*; or the *Zeitschrift der deutschen morgenländischen Gesellschaft,*—every page of which casts a flood of light on the history, the religions, and the philosophical systems of every nation of Asia.

But all this arduous work performed by the historical school is far from completing the task of the science of language; because the theory of the historical school, by conceiving language as an organism, soon found it necessary to connect linguistic study with the kindred sciences of history and psychology. Language, as Dr. Steinthal observes, taken by itself and treated historically, only represents a partial, one-sided revelation of any national mind. Any purely technical investigation of language, in order to be philological and to obtain historical significance, must bring the historical evolution into contact with numerous other manifestations of the mental life of a race or nation. In this sense Grimm's *Grammar of the Germanic Languages* is quoted by Professor Steinthal as a luminous instance of a broad, philological treatment of language, because, on the one hand, Grimm limits his technical research to the historical grammar, while, on the other, he extends his investigation to all the departments of literature—to religion, jurisprudence, social institutions, to all the intellectual achievements of the Germanic nations. In this sense Grimm became the true founder of a racial, Germanic philology. But besides Grimm's Germanic philology

there are other national philologies, like those of the Romance, Slav, and other linguistic groups. The investigations of these, also, include the literatures, institutions, and the whole intellectual activity of those nations; whence it must follow that the exclusively historical method applied to each group will not be sufficient. We are prompted to a deeper study of the relations of the science to several other sciences. In a broad sense, philology thus becomes the science of the universal human mind, as manifested in the varieties and differences of all the national philologies of the globe. In order to understand and to create ideas, philology must think—must be a thinking science. Philology becomes an historical science only through combining together perception (*Anschauung*) and thinking. In philology perception and thinking in a definite form are revealed as *interpretation* and *critique*. Interpretation seeks to understand the objects of cognition, while critique measures particular objects according to universal standards by comparing, judging, and arranging the successive stages of any evolution. In this sense philology must be said to perform a double task: first, from an historical and philosophical point of view, it endeavors to understand the evolution of the universal human mind; and thereupon it applies the laws of that evolution to the phenomenon of speech, by investigating the origin and nature of language. In fact, considerable time before Franz Bopp, several European and American philologists had already undertaken to write so-called "Philosophies" of language, purporting to explain the origin and nature of language, the relations of speech to thought, to logic, and so forth. But, when we recall to mind the dualistic philosophy of the middle ages and that same dualistic tendency again, from Descartes, through Kant, to Hegel, it was to be expected that those "pseudo"-philosophies of language would result in some of the the most erratic and arbitrary elaborations

of the European mind—of that European mind which the Frenchman Rénan, perhaps too severely, has somewhere characterized as, theoretically, the most gullible among the racial minds of the globe.

Without entering into a detailed discussion of the several divergent theories, let me simply remark that in Germany the so-called "younger school" of comparative grammar, founded by Schleicher, maintains that language is purely a *natural* organism; and that the science of language belongs to natural history. This short-lived school, however, relapsed into the empty formalism which earlier had been set forth by the German philologist Becker. In this connection it may suffice to recall to mind that although Schleicher and other distinguished modern linguists (including the late Prof. Max Müller, and in America, Professor Dwight Whitney) have doubtless rendered important service to the science of language, it does not follow that they always proved to be profound or very consistent thinkers in formulating their theories on the origin and the nature of language. As regards America, such singularly one-sided treatises as Professor Whitney's *Oriental and Linguistic Studies,* and his *Study of Language,* have not failed to produce a painful impression upon the European adepts of the historical school founded by Prof. Franz Bopp. Those who may have read Dr. Steinthal's *Antikritik,* written in refutation of Professor Whitney's philological views, will easily understand the the wide divergence between American and German philological ideas. In attributing to language stratifications, phonetic decay, dialectic regeneration etc., as to a solid substance, the writers of self-styled "Philosophies" of language forgot that even Hegel himself had written in regard to Spinoza that "substance must be resolved into a process."

Among the men who in the early decades of the nine-

teenth century imparted a novel impulse to the theoretical investigation of language Wilhelm von Humboldt particularly deserves to be mentioned as one of the most original thinkers of modern times. On this occasion I can only refer to his last work about the Kawi language—an extinct language on the Island of Java. In his intensely thoughtful introduction to this work, while discussing the existing varieties of human languages, Humboldt applies to the domain of language those same ideas which he had earlier applied to the whole intellectual evolution of man. More than all others, Humboldt was impressed with the *individual* character of the evolution of the human mind. Throughout history in the laws and the institutions of the State, in the sciences and arts—everywhere he meets with individual characters, individual achievements. As a result, he views history mainly through nature's distribution of mankind into races and nations; and, moreover, he conceives each nation as a collective individual. But because national differences are most markedly expressed precisely in the forms of their respective languages, he finds it necessary to investigate also the nature of all human utterance. He regards each single language as a definite, individual expression of some national characteristic; as some exclusive, national conception of earthly existence; or, as he calls it, *"eine eigenthümliche Weltansicht."* Still, as he proceeds, Humboldt himself is forced to acknowledge that even this individual conception is yet far from satisfying the innate cravings of the human spirit. Within all men—individuals as well as nations—there exists a foreboding of the universal, a craving for totality. This obscure longing for totality immediately accompanies our sense of individuality itself; and it even grows more intense in the same ratio as our sense of individuality is strengthened. Individuals, according to Humboldt, are but the external manifestations of the particular evolutions of the

universal vital principle, or energy, which he terms *"das innere sich in seiner Fülle frei entwickelnde Lebensprincip.* But this vital principle, this center, is entirely unknown to us. The unknown, abstract totality remains but an aspiration—an unsatisfied longing. From these ideas we perceive that Humboldt himself, for a moment at least, relapses into the dualistic mysticism of the abstract "thing-in-itself."

By retaining this abstract totality, Humboldt accordingly is unable to reach an organic classification of languages, but only obtains a classification by differences of degrees. Prof. H. Steinthal, however, points out that Humboldt himself, in the progress of his deep investigation, unconsciously breaks through the dualism and solves the apparent conflict between the individual phenomenon and the craving for totality. Humboldt had remarked that in the historical evolution of the universal human mind we may discern a double kind of progress. First, there is the slow, almost mechanical advance in a straight line, as it were, in which the earlier is ever the cause of the later, the subsequent phenomenon. But from time to time, by suddenly imparting new impulse, the original, sluggish movement is not only continued forward, but accelerated and intensified; as, e. g., when within any national groups there arise more perfect laws and improved religious or social institutions—all of which things are seen throughout history to have been mainly the work of individual men of genius. These men, by their inborn creative energy and will-power, were able to transform the old elements into a more expanded human activity, no longer purely individual and local, but often of a broader or even universal value and significance.

This actually takes place within the historical evolution of languages. Humboldt asks, "who creates language?" And he answers that within the race or nation, language

is the work of all collectively, and at the same time of each single individual within the nation. But here also we find that in each nation there are periods when this collective linguistic work of the masses suddenly soars to unexpected heights, or is transformed by the higher creative energy of individual men whom we usually call men of genius. In poetry and in prose the individual efforts of these men at all times mark the creation of the national literatures of the world. The traditional elements which they employed were not strictly the causes, but merely the conditions of their creative efforts. The true causes must be sought for in their own higher creative energy or power of will which transformed the previous elements into a broader ideal for the benefit of their own people and of humanity at large.

During these creative periods of their national literatures, we thus perceive that the respective languages display indeed their most exclusive, individual, *national* forms; yet, at the same time, that both in form and contents they assume a *universal* human value and significance. It is precisely in this sense that we call the Greek and Latin the "classical" languages; and in this sense, also, the word "genius" simply means *the creative energy of individual personality rising to the heights of totality of universality.*

The arbitrary *a priori* doctrine of the substantial unity of all languages had for ages closed to philology every avenue of thought, of critique, and the creation of new ideas. On the contrary, the modern science of language, while refraining from absolute methods, investigates language mainly as a natural psychic process. Metaphysics and logic remain the sciences of general principles; but within the domain of objective reality, of nature, the study of language, like other natural sciences, requires a special, mediating, or auxiliary science. This mediating science,

the study of language (together with philology and history) will clearly find in psychology. As the natural scientist refers the totality of natural objects to one principle, i. e., to matter, so the psychological philologist who investigates the historical evolution of the human mind refers all the forms of that manifestation to the particular principle which we call spirit, soul. Psychology above all is an experimental science and as such is not concerned about the reconciliation of matter and soul. The natural scientist understands by matter the totality of the laws which govern material phenomena; and, likewise, soul to the psychological philologist denotes the totality of the laws which control spiritual or mental manifestations. The laws the soul follows remain the same whether we prefer to regard them as the laws of certain cerebral functions, or as the laws of some immaterial soul-substance. Psychology, accordingly, is purely a mediating and auxiliary science to philology for the investigation of the laws which are discernible in the mental evolution of humanity; but, whether the origin of speech must be referred to an unconscious activity or to innate faculties, is a problem entirely apart.

The English thinker John Stuart Mill, in his *System of Logic* published in the year 1843, was one of the first to propose what he called a "Social Science"; and in the same book also a "Science of National Character." The English thinker would probably have realized his purpose, and would have opened up a much wider field of research, if he had clearly understood the relations of philology to history and to psychology, as well as the fact that in this broader sense philology *is* history. Within philology, from the point of view of the inward factors of the human mind, the history of races and of nations becomes the history of the organization of states, of national constitutions, of commerce, of private life, and of the arts. While the

outward division into races and nations marks a difference, on the other hand the mental evolution reveals a sort of unifying tendency. A higher degree of racial and national self-consciousness, therefore, becomes the true lever of history—the distinctive mark, characterizing the historical, racial and national minds, over against the stationary, non-historical and prehistorical ones. The possession of a true, historical self-consciousness requires that the respective national minds should entertain a clear notion of the world at large and of their own individual value to humanity in their pursuit of definite humanitarian aims. All this implies something more than merely a mechanical process or an enumeration of dry sociological statistics, but rather the creative stages of a mental evolution—a long series of repeated unequal efforts, which the non-historical races never have made, but which the prehistorical races attempted, at least, to realize during their prehistoric period. It was reserved for the modern science of language to construct a more solid "Science of National Character." From the middle of the past century, German philologists, and German philological reviews, have been collecting a wealth of valuable materials for this purpose, among which latter I may again mention the *Zeitschrift für Völkerpsychologie*, first edited by the Professors Steinthal and Lazarus.

* * *

In the above general survey, it was not my intention to give a complete outline of Humboldt's theory of the science of language. This would have required a lengthy investigation of the principles (*Grundsätze*) of his science of language, and a close analysis of his "speech-idea" (*die Sprachidee*, or *die Idee der Sprachvollendung*), in the elucidating and adjusting of which Dr. Steinthal has performed the arduous task of imparting a higher value to

Humboldt's original ideas. By this "speech-idea" we do not understand any attainable postulate or absolute "speech-ideal," but only the speaking-activity of mankind while striving to realize, to create language. The main task of the modern science of language will for a long time still consist in the effort to demolish *the dualistic notion of the substantial unity of languages.* Dr. Steinthal believed that this could be attained by attempting a novel classification of languages, conceived as evolution of the speech-idea. In this classification the "kosmos" of articulate sounds, of the "airy tongues" of all the races of the earth, has been distributed into thirteen classes in striking analogy with certain natural sciences.

A. H. GUNLOGSEN.

CRITICISMS AND DISCUSSIONS.

A MATHEMATICAL STUDY OF MAGIC SQUARES.

A NEW ANALYSIS.

Magic squares are not simple puzzles to be solved by the old rule of "Try and try again," but are visible results of "order" as applied to numbers. Their construction is therefore governed by laws that are as fixed and immutable as the laws of geometry.

It will be the object of this essay to investigate these laws, and evolve certain rules therefrom. Many rules have already been published by which various magic squares may be constructed, but they do not seem to cover the ground comprehensively. It is the belief of the writer that the rules herein given will be competent to produce all forms of 3×3 and 4×4 squares with their compounds, and

a	b	c
d	e	g
h	m	n

Fig. 1.

Fig. 2.

8	1	6
3	5	7
4	9	2

Fig. 3.

23	2	20
12	15	18
10	28	7

Fig. 4.

also that the principles enunciated will apply largely to all other magic squares.

Let Fig. 1 represent a 3×3 magic square. By inspection we note that:

$$h + c = b + m$$
$$\text{and } h + m = g + c$$
$$\text{therefore } 2h = b + g$$

In this way four equations may be evolved as follows:

$$2h = b + g$$
$$2n = b + d$$

$$2c = d + m$$
$$2a = m + g$$

It will be seen that the first terms of these equations are the ıntities which occur in the four corner cells, and therefore that quantity in each corner cell is a mean between the two quan-:s in the two opposite cells that are located in the middle of outside rows. It is therefore evident that the least quantity in magic square must occupy a middle cell in one of the four ide rows, and that it cannot occupy a corner cell.

Since the middle cell of an outside row must be occupied by the t quantity, and since any of these cells may be made the middle of the upper row by rotating the square, we may consider this to be so occupied.

Having thus located the least quantity in the square it is plain : the next higher quantity must be placed in one of the lower ner cells, and since a simple reflection in a mirror would reverse position of the lower corner cells, it follows that the second allest quantity may occupy *either* of these corner cells. Next we ıy write more equations as follows:

$$a + e + n = S \quad \text{(or summation)}$$
$$d + e + g = S$$
$$h + e + c = S$$

also

$$a + d + h = S$$
$$n + g + c = S$$

therefore

$$3e = S$$

and

$$e = S/3$$

Hence the quantity in the central cell is an arithmetical mean ɔetween any two quantities with which it forms a straight row or :olumn.

With these facts in view a magic square may now be constructed ıs shown in Fig. 2.

Let x, representing the least quantity, be placed in the middle ıpper cell, and $x + y$ in the lower right-hand corner cell, y being he increment over x.

Since $x + y$ is the mean between x and the quantity in the left-ıand central cell, this cell must evidently contain $x + 2y$.

Now writing $x + v$ in the lower left-hand corner cell, (con-

sidering v as the increment over x) it follows that the central right-hand cell must contain $x + 2v$.

Next, as the quantity in the central cell in the square is a mean between $x + 2y$ and $x + 2v$, it must be filled with $x + v + y$. It now follows that the lower central cell must contain $x + 2v + 2y$, and the upper left-hand corner cell $x + 2v + y$, and finally the upper right-hand corner cell must contain $x + v + 2y$, thus completing the square which necessarily must have magic qualifications with any conceivable values which may be assigned to x, v, and y.

We may now proceed to give values to x, v, and y which will produce a 3×3 magic square containing the numbers 1 to 9 inclusive in arithmetical progression. Evidently x must equal 1, and as there must be a number 2, either v or y must equal 1 also.

Assuming $y = 1$, if $v = 1$ or 2, duplicate numbers would result, therefore v must equal at *least* 3.

In the square under consideration the central number must be 5 and as this number is composed of $x + y + v$, therefore v must equal 3. Using these values, viz., $x = 1$, $y = 1$ and $v = 3$, the familiar 3×3 magic square shown in Fig. 3 is produced.

It is important to recognize the fact that although in Fig. 3 the series of numbers used has an initial number of 1, and also a constant increment of 1, yet this may be considered as only an accidental feature pertaining to this particular square, the real fact being that *a magic square of* 3×3 *is always composed of three sets of three numbers each.* The difference between the numbers of each trio is uniform, but the difference between the last term of one trio and the first term of the next trio is not necessarily the same as the difference between the numbers of the trios.

For example, if $x = 2$, $y = 5$ and $v = 8$, the resulting square will be as shown in Fig. 4.

The trios in this square are as follows:

$$2 — 7 — 12$$
$$10 — 15 — 20$$
$$18 — 23 — 28$$

The difference between the numbers of these trios is $y = 5$, and the difference between the homologous numbers is $v = 8$.

A recognition of these two sets of increments is essential to the proper understanding of the magic square. Their existence is masked in the 3×3 square shown in Fig. 3 by the more or less accidental quality that in this particular square the difference between ad-

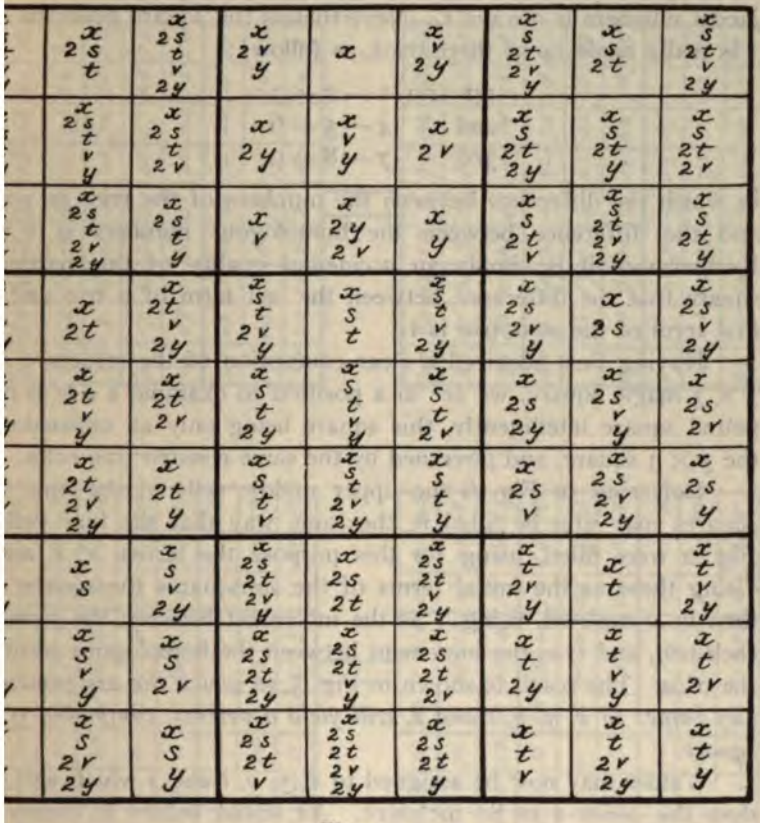


Fig. 5.

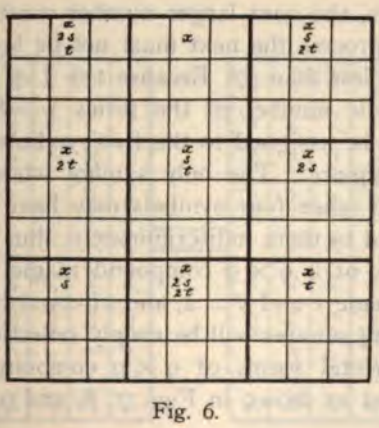


Fig. 6.

jacent numbers is always 1. Nevertheless the square given in Fig. 3 is really made up of three trios, as follows:

1st trio 1 — 2 — 3
2nd " 4 — 5 — 6
3rd " 7 — 8 — 9

in which the difference between the numbers of the trios is $y = 1$, and the difference between the homologous numbers is $v = 3$. Furthermore it is simply an *accidental* quality of this particular square that the difference between the last term of a trio and the first term of the next trio is 1.

Having thus acquired a clear conception of the structure of a 3×3 magic square, we are in a position to examine a 9×9 compound square intelligently, this square being only an expansion of the 3×3 square, and governed by the same constructive rules.

Referring to Fig. 6 the upper middle cells of the nine subsquares may first be filled in the same way that the nine cells in Fig. 2 were filled, using for this purpose the terms, x, t, and s. Using these as the initial terms of the subsquares the square may then be completed, using y as the increment between the terms of each trio, and v as the increment between the homologous terms of the trios. The result is shown in Fig. 5, *in which the assignment of any values to x, y, v, t and s, will yield a perfect, compound 9×9 square.*

Values may now be assigned to x, y, v, t and s which will produce the series 1 to 81 inclusive. As stated before in connection with the 3×3 square, x must naturally equal 1, and in order to produce 2, one of the remaining symbols must equal 1. In order to avoid duplicates, the next larger number must at least equal 3, and by the same process the next must not be less than 9 and the remaining one not less than 27. Because $1 + 1 + 3 + 9 + 27 = 41$, which is the middle number of the series 1 — 81, therefore just these values must be assigned to the five symbols used in the construction of the square. The only symbol whose value is fixed, however, is x, the other four symbols may have the values 1 — 3 — 9 or 27 assigned to them indiscriminately, thus producing all the possible variations of a 9×9 compound magic square.

If v is first made 1 and $y = 2$, and afterwards y is made 1 and $v = 2$, the resulting squares will be simply reflections of each other, etc. Six fundamental forms of 9×9 compound magic squares may be constructed as shown in Figs. 7, 8, and 9.

67	72	65	4	9	2	49	54	47
26	19	24	44	37	42	62	55	60
21	23	25	39	41	43	57	59	61
22	27	20	40	45	38	58	63	56
35	28	33	80	73	78	17	10	15
30	32	34	75	77	79	12	14	16
31	36	29	76	81	74	13	18	11

71	8	53	64	1	46	69	6	51
26	44	62	19	37	55	24	42	60
35	80	17	28	73	10	33	78	15
66	3	48	68	5	50	70	7	52
21	39	57	23	41	59	25	43	61
30	75	12	32	77	14	34	79	16
67	4	49	72	9	54	65	2	47
22	40	58	27	45	63	20	38	56
31	76	13	36	81	18	29	74	11

Fig. 7.

49	78	23	28	57	2	43	72	17
62	7	36	68	13	42	74	19	48
9	35	61	15	41	67	21	47	73
34	63	8	40	69	14	46	75	20
65	10	39	80	25	54	59	4	33
12	38	64	27	53	79	6	32	58
37	66	11	52	81	26	31	60	5

77	56	71	22	1	16	51	30	45
62	68	74	7	13	19	36	42	48
65	80	59	10	25	4	39	54	33
24	3	18	50	29	44	76	55	70
9	15	21	35	41	47	61	67	73
12	27	6	38	53	32	64	79	58
49	28	43	78	57	72	23	2	17
34	40	46	63	69	75	8	14	20
37	52	31	66	81	60	11	26	5

Fig. 8.

67	78	59	10	21	2	43	54	35
26	7	18	50	31	42	74	55	66
9	17	25	33	41	49	57	65	73
16	27	8	40	51	32	64	75	56
47	28	39	80	61	72	23	4	15
30	38	46	63	71	79	6	14	22
37	48	29	70	81	62	13	24	5

77	20	53	58	1	34	69	12	45
26	50	74	7	31	55	18	42	66
47	80	23	28	61	4	39	72	15
60	3	36	68	11	44	76	19	52
9	33	57	17	41	65	25	49	73
30	63	6	38	71	14	46	79	22
67	10	43	78	21	54	59	2	35
16	40	64	27	51	75	8	32	56
37	70	13	48	81	24	29	62	5

Fig. 9.

It will be noted that these are arranged in three groups of two squares each on account of the curious fact that the squares in each pair are mutually convertible into each other by the following process:

If the homologous cells of each 3×3 subsquare be taken in the order as they occur in the 9×9 square, and a 3×3 square made therefrom, a new magic 3×3 square will result. And if this process is followed with all the cells and the resulting nine 3×3 squares are arranged in magic square order a new 9×9 compound square will result.

For example, referring to the upper square in Fig. 7, if the numbers in the central cells of the nine 3×3 subsquares are arranged in magic square order, the resulting square will be the central 3×3 square in the lower 9×9 square in Fig. 7. This law holds good in each of the three groups of two squares (Figs. 7, 8 and 9) and no fundamental forms other than these can be constructed.

a	b	c	d
g	h	n	m
n	o	p	s
t	r	x	y

Fig. 10.

$\frac{a}{x}$			$\frac{a}{r}$
			$\frac{b}{x}$
			$\frac{c}{x}$
$\frac{g}{x}$	$\frac{a}{y}$	$\frac{a}{t}$	$\frac{g}{r}$

Fig. 11.

$\frac{a}{x}$	$\frac{g}{y}$	$\frac{g}{t}$	$\frac{a}{r}$
$\frac{b}{r}$	$\frac{c}{t}$	$\frac{c}{y}$	$\frac{b}{x}$
$\frac{c}{r}$	$\frac{b}{t}$	$\frac{b}{y}$	$\frac{c}{x}$
$\frac{g}{x}$	$\frac{a}{y}$	$\frac{a}{t}$	$\frac{g}{r}$

Fig. 12,

1	8	12	13
14	11	7	2
15	10	6	3
4	5	9	16

Fig. 13.

The question may be asked: How many variations of 9×9 compound magic squares can be made? Since each subsquare may assume any of eight aspects without disturbing the general order of the complete square, and since there are six radically different, or fundamental forms obtainable, the number of possible variations is 6×8^9!

We may now proceed to analyze the construction of a 4×4 magic square as represented in Fig. 10. From our knowledge of this square and its qualifications we are enabled to write four equations as follows:

$$a + h + p + y = S \text{ (Summation)}$$
$$g + h + n + m = S$$
$$n + o + p + s = S$$
$$t + o + n + d = S$$

By inspection of Fig. 10 it is seen that the sum of the initial

terms of these four equations equals S, and likewise that the sum of their final terms also equals S. Hence $h+n+o+p=S$. It therefore follows:

1st. That *the sum of the terms contained in the inside* 2×2 *square of a* 4×4 *square is equal to* S.

2d. Because the middle terms of the two diagonal columns compose this inside 2×2 square, their end terms, or *the terms in the four corner cells of the* 4×4 *square must also equal* S, or:

$$a+d+t+y=S$$

3d. Because the two middle terms of each of the two inside columns (either horizontal or perpendicular) also compose the central 2×2 square, *their four end terms must likewise equal* S.

4th. We may now write the following equations:

$$b+c+v+x=S$$
$$b+c+a+d=S$$

therefore

$$a+d=v+x,$$

which shows that *the sum of the terms in any two contiguous corner cells is equal to the sum of the terms in the two middle cells in the opposite outside column.*

5th. Because

$$g+h+n+m=S$$

and

$$o+h+n+p=S$$

it follows that

$$g+m=o+p$$

or, that *the sum of the two end terms of any inside column,* (either horizontal or perpendicular) *is equal to the sum of the two middle terms in the other parallel column.*

6th. Since

$$t+o+n+d=S$$

and

$$h+o+n+p=S$$

therefore

$$t+d=h+p$$

or *the sum of the two end terms of a diagonal column is equal to the sum of the two inside terms of the other diagonal column.*

These six laws govern *all* 4×4 magic squares whether they

are perfect or imperfect, but perfect 4×4 squares also possess the additional feature that the sum of the numbers in any two cells that are equally distant from the center and symmetrically opposite to each other in the square equals $S/2$.

With these rules before us we may now construct a perfect 4×4 magic square. Referring to Fig. 11, in the upper left-hand corner cell we will place a number which may be represented by $a + x$, and in the right-hand upper corner a number represented by $a + v$. Also in the central cells of the lower row we will write numbers represented respectively by $a + y$ and $a + t$. Then in the lower left-hand cell we will place a number represented by $g + s$, and in the central cells of the outer right-hand column numbers represented respectively by $b + x$ and $c + x$, and because the square is to be perfect, we must write in the lower right-hand corner a number represented by $g + v$.

The unfinished perfect 4×4 square thus made may now be studied by the light of the laws previously given.

By inspection we see that

$$a + g = b + c$$

and

$$x + v = y + t$$

We also see that the central cells of the upper row should be occupied by the symbol g together with x and v, by law 4, but if thus occupied, duplicate numbers would result.

It has, however, been just shown that

$$x + v = y + t$$

and therefore g may be combined with y and t, *thus producing diverse numbers, and still remaining correct in summation.*

Seeing that the square is to be perfect, the cell which is symmetrically opposite to that occupied by $a + y$, must be filled by a number which will produce with $a + y$, a number equal to $(a + x) + (g + v)$, which will be $g + t$, because

$$x + v = y + t$$

In the same way the next cell to the left must be filled with $g + y$, and we may similarly fill the two inner cells of the left-hand outer column with $b + v$ and $c + v$.

By like simple calculations all the remaining empty cells may be filled, thus completing the 4×4 square shown in Fig. 12.

will now proceed to show what numbers may be assigned
ght symbols used in Fig. 12 to produce a perfect 4×4
iare containing the numbers 1 to 16.

evident that some pair of symbols must equal 1 and
that one of the two symbols must equal 1 and the other
il 0, (minus and fractional quantities being excluded).

also evident that because $a + g = b + c$, if a is the
number in the series, g must be the *largest*, and therefore
numbers represented by a, b, c, g must form a series in
means equal the extremes. In like manner x, y, t, v must
another similar series.

osing now that $x = 1$ and $a = 0$, then $g + v$ must equal
nce b and c are *each less* than g, and must be also *diverse*
other, we find that g *cannot be less than* 3. Supposing
that $g = 3$, then because $a + g = 3 = b + c$, it is evident
ist equal 1 (or 2) and c must equal 2 (or 1). The four
a, b, c, g may therefore be assigned values as given below.

$a = 0$	$x = 1$
$b = 1$	$y = 5$
$c = 2$	$t = 9$
$g = 3$	$v = 13$

$+ v = 16$, v must equal 13 and $y + t$ must equal 14.
tion it is seen that either y or t must equal 5, and assigning
ber to y, t becomes 9, or vice versa.

these values assigned to the symbols, Fig. 12 will develop
t 4×4 square shown in Fig. 13.

possible number of diverse 4×4 magic squares which may
ucted using the numbers 1 to 16 inclusive has been vari-
mated by different writers, 880 changes having been here-
nsidered the maximum number. It can however be easily
at no less than 4352 of these squares may be constructed,
l be demonstrated under the next heading.

DY OF THE POSSIBLE NUMBER OF VARIATIONS IN MAGIC SQUARES.

s been shown in connection with the 3×3 magic square
is only one possible arrangement of nine different num-
ch will constitute a magic square.

4×4 and all larger squares may however be constructed

in great variety, their number of diverse forms increasing in an immense ratio with every increase in the size of square.

Beginning with the 4×4 square, in order to solve the problem of the possible number of variations that may be constructed with the numbers 1 to 16 inclusive, it will be necessary to consider the relative properties of its component elements, which may be conveniently expressed as follows, although there are several other sets of eight numbers whose combinations will yield similar results.

$$\begin{array}{ll} a = 1 & x = 0 \\ b = 2 & y = 4 \\ c = 3 & t = 8 \\ g = 4 & v = 12 \end{array}$$

As previously stated, it will be seen that

$$a + g = b + c$$
$$\text{and } x + v = y + t.$$

In consequence of this law we find that a column in a 4×4 magic square may contain each of the eight qualities once (as in the diagonal rows of square shown in Fig. 12). In other cases a pair of elements may be lacking, but be represented by another pair, the latter being repeated in the column, (as shown in the two outer vertical columns of Fig. 12). This ability to duplicate some of the elements in place of others that are omitted leads to an enormous amplification of the number of possible variations.

If all the cells in any column are filled, (or any set of four cells, the summation of which is equal to a column) the remainder of the square may then be completed by the rules previously given. This column may therefore be termed a "basic" row or column.

There are four plans by which a basic row may be filled, thus making four classes of squares which may be called Classes, I, II, III and IV.

For the sake of brevity, the symbols a, b, c and g will be termed the "a" elements, and x, y, t and v the "x" elements.

Class I includes those squares in which the basic row is made up of all of the eight elements used once each.

Class II includes those squares in which one of the elements used in the first cell of the basic row is also used in the second cell.

Class III includes those squares in which an element of the first cell in the basic row is also used in the third cell.

Class IV includes those squares in which elements of the first cell in the basic row are also used in the second and third cells.

Class I may be further divided into three Genera as follows:

Genus A comprises those squares in which neither the outer nor inner pair of cells contain either a mean or an extreme pair of "a" or "x" elements. Fig. 14 represents a basic row of Class I, Genus A.

Genus B comprises those squares in which both the inner and outer pair of cells of the basic row contain a pair of elements as shown in Fig. 15 in which the outer cells contain a pair of "a" elements (a and g) and the inner cells also contain a pair of "a" elements (b and c).

Genus C comprises those squares in which both pairs of cells

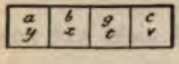


Fig. 14.

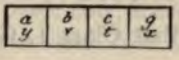


Fig. 15.

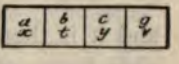


Fig. 16.

contain two pairs of elements each, as for example when the two outer cells contain a and g, and x and v, and the two inner cells contain b and c, and t and y, as shown in Fig. 16.

Classes II, III, and IV have but one genus each, and there are consequently in all, six different types. To determine the number of specimens which each genus will yield, we will now expand a basic row into a complete square.

Fig. 17.

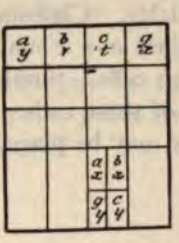


Fig. 18.

Fig. 17 shows a 4×4 square in the upper row of which the elements are written as previously given under Class I, Genus A. Filling the inner pair of cells in the lower row we see that these cells must contain $a + v$ and $c + y$, but we have the *choice* of writing $c + y$ in the right or left-hand cell. Choosing the right-hand cell the square is then completed by the laws previously given, and but slight attention is required to show that the contents of each cell is *forced* by these laws.

This square will be magic for any values assigned to the ele-

ments, and it will be normal if they are given the values 1, 2, 3, 4 and 0, 4, 8, 12.

To find the number of *possible* squares of the above class and genus we reflect that for the first cell we have a choice of 16. For the fourth cell we have a choice of only 4, since in the example, having used a and y in the first cell we are debarred from using either a, y, g or t in the fourth cell. Next, for the two central cells, we evidently have a choice of 4, and in completing the square we have the choice of *two* methods to fill the lower row. Multiplying the number of *choices* we have

$$16 \times 4 \times 4 \times 2 = 512.$$

and it is therefore clear that Class I, Genus A will yield 512 possible forms of squares.

Fig. 18 shows a square in which the basic row of elements are arranged so as to produce Class I Genus B. In filling the central cells of the lower row, it is found that the equivalent of $(a + y) + (g + x)$ must be used, and there are three such equivalents, viz.,

$$(1)\ (a + x) + (g + y)$$
$$(2)\ (b + x) + (c + y)$$
$$(3)\ (b + y) + (c + x).$$

(3) however will be found impossible, leaving only (1) and (2) available. Choosing (1) it will be seen that there are two choices since $a + x$ may be located in either the right or left-hand of the two cells. Similarly if (2) is chosen, $b + x$ may be placed in either of these cells. Hence in, say, the right-hand central lower cell, there may be placed:

$$(1)\ a + x$$
$$(2)\ g + y$$
$$(3)\ b + x$$
$$(4)\ c + y$$

as shown in Fig. 18, and when one of these four pairs of elements is used the remainder of the square becomes fixed. It therefore follows that for the first cell of the basic row there is a choice of 16. For the fourth cell of same row there is a choice of 4. For the central cells of same row there is a choice of 4 and for the lower row there is a choice of 4. Multiplying these choices together we have

$$16 \times 4 \times 4 \times 4 = 1024.$$

which is the possible number of variations of Class I, Genus B.

Writing a basic row of Class I, Genus C as given in Fig. 16, we find that the equivalents of $(a+x)+(g+v)$ must be used to fill the central cells of the lower row. Because

$$a+g=b+c$$
$$\text{and } x+v=t+y$$

there are no less than sixteen pairs which may be made all equal to each other. Ten of these pairs however will be found unavailable, leaving six pairs to choose from, and since each of these six pairs may be located in either of the two cells, there is a choice of 12 different ways in which the lower row may be filled.

For the first cell of the basic row, there is naturally a choice of 16. For the fourth cell of the same row there is no choice, as this cell must be filled with the complements of the first cell. For the two middle cells of the basic row there is a choice of 4. Multiplying these choices together we have:

$$16\times 4\times 12=768,$$

which is the possible number of variations of Class I, Genus C.

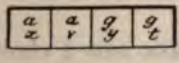


Fig 19.

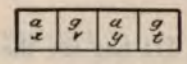


Fig. 20.

Proceeding now to Class II, a basic row may be formed as given in Fig. 19. It is evident that neither a nor g can be used in the lower row of the square, but as equivalents of

$$(a+v)+(g+y)$$

we may use either of the two couples:

$$(c+y)+(b+v)$$
$$(b+y)+(c+v),$$

and since either couple may be placed in either of two cells, there is a choice of 4 variations. To form the basic row, we have for the first cell a choice of 16 as before. For the fourth cell there is a choice of 6 seeing that one of the elements of the first cell must be located therein, coupled with any one of the three remaining elements of the opposite group. For the two inner cells there is a choice of 2. Hence for Class II we have:

$$16\times 6\times 2\times 4=768 \text{ varieties.}$$

Class III has a basic row constituted as shown in Fig. 20. It will be found impossible to construct a magic square from the above basic row along the lines hitherto followed. Nevertheless, four varieties of squares may be constructed on every basic row of this class, on account of certain relations between the two groups of elements which have not as yet been considered. The squares may be made as herein before shown, but when completed they appear to be imperfect, as will be seen in Figs. 21, 22, 23, and 24 which

Fig. 21.

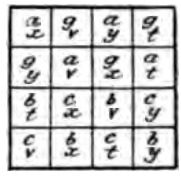


Fig. 22.

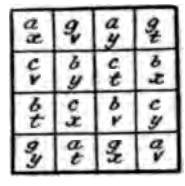


Fig. 23.

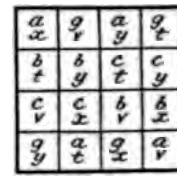


Fig. 24.

illustrate four squares built up on the foregoing basic row. These squares although seemingly imperfect, are not actually so on account of a peculiar relationship between the numbers 1, 2, 3, 4 and 0, 4, 8, 12.

Class III has for the first cell of the basic row a choice of 16, for the third cell a choice of 6, for the second cell a choice of 2, and of each of the above forms there are 4 variations. Hence we have

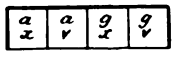
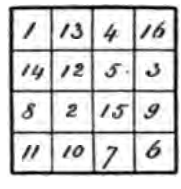
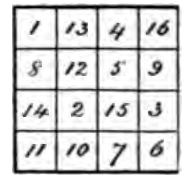


Fig. 25.



1	13	4	16
14	12	5	3
8	2	15	9
11	10	7	6

Fig. 26.



1	13	4	16
8	12	5	9
14	2	15	3
11	10	7	6

Fig. 27.

$$16 \times 6 \times 2 \times 4 = 768 \text{ varieties}$$

in this class.

Class IV has a basic row as shown in Fig. 25, and the two middle cells of the lower row may be filled with either of the two couples

$$(b + t) + (c + y)$$
$$\text{or } (b + y) + (c + t)$$

thus permitting a choice of 4. Having a choice of 16 for the first

cell of the basic row, and a choice of 4 for the two inner cells of this row, we have as a total:

$$16 \times 4 \times 4 = 256.$$

This square however has a peculiar property, owing to each couple of cells containing a pair of elements, which permits two variants to be made after each sub-basic row has been fixed. This property is illustrated in Figs. 26 and 27, in which both of the upper and lower rows are alike, and yet the squares are diverse. For class IV we therefore have:

$$256 \times 2 = 512 \text{ varieties.}$$

Summarizing the preceding results it will be seen that there are in

Class	I,	Genus A,	512	varieties
"	I,	" B,	1024	"
"	I,	" C,	768	"
"	II,		768	"
"	II,		768	"
"	III,		768	"
"	IV,		512	"
		Total	4352	varieties.

There are thus at least 4352 diverse forms of 4×4 magic squares which may be constructed with the numbers 1 to 16.

Passing on to the 5×5 square, its analysis may be omitted, as the principles that underlie the formation of the 3×3 and 4×4 squares also enter largely into the formation of this and all other squares.

It may therefore be taken for granted that the components may be formed by the successive addition of five qualities in one group to the five qualities in another group.

In order that the 5×5 square may consist of the numbers 1 to 25 inclusive, the following values may be assigned to the respective symbols:

$a = 0$	$x = 1$
$b = 1$	$y = 6$
$c = 2$	$t = 11$
$d = 3$	$s = 16$
$g = 4$	$v = 21.$

Other values might be used but the foregoing are probably best adapted for general purposes.

... unity of this square will indicate that the basic r... ...constructed in a very large number of different ways.

... the first cell there is a choice of 25 combinations ... for the second cell 16, for the third 9, for the fo... ... for the fifth there is naturally no choice, there being o... ...possible combination left. We therefore have at the very

$$25 \times 16 \times 9 \times 4 = 14400$$

...possible variations in the basic row of this square.

...To complete the square, there are at least three availabl... ...the resulting squares may be designated as Classes I, ...respectively.

...Class I is made by writing the symbols of the "a" g... ...elements in diagonal columns across the square, in one di... ...from left to right, and the symbols of the "x" group ...diagonal columns, but in the opposite direction as shown in

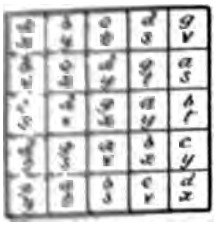


Fig. 28.

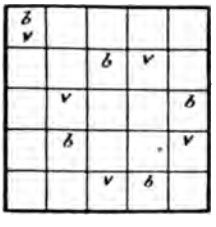


Fig. 29.

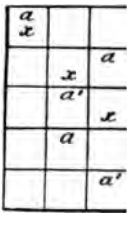


Fig. ...

It will be seen that the "a" elements occupy the rig... ...diagonal columns and the "x" elements the left-hand d... ...columns. It is also evident that irrespective of the way in... ...the basic row may be filled, the square may be compl... ...making "a" or "x" elements occupy either the right or le... ...diagonal column, and hence there is a choice of *two* meth... ...the one case, the center cell being filled with $a + v$, and in th... ...(as shown in Fig. 28) it is filled with $g + x$.

Class II. The Squares in this class are constructed by ... ...the elements in the basic row move by "knight's moves. ...example, if the left-hand corner cell of the basic row cont... ...symbols of $b + v$, these symbols (and also all the other com... ...of the basic row) may assume the relative positions shown ... It is clear that in this case there is the option of excl... ...the places of $b + v$ throughout the square, thus giving a cl... ...new ways.

Class III is made by combining the method of Class I with that of Class II as shown in Fig. 30. One element (and naturally all of its fellows in the group) runs diagonally while the other element is placed by knight's moves. There is consequently a choice of *two* elements, either of which may dominate the diagonals or be located by knight's moves. In the case shown in Fig. 30 it is evident that "a" may occupy the cells marked "a" or those marked "a^1," there being eight possible knight's moves from any cell. This fact gives still another choice of two different ways, so there is a choice of *four* methods in Class III.

Summarizing the foregoing results:

For the basic row there is a choice of 14400.

For Class I squares	$2 \times 14400 =$	28800
For Class II squares	$2 \times 14400 =$	28800
For Class III squares	$4 \times 14400 =$	57600
		115200.

So there are at least 115200 different ways in which a perfect 5×5 square may be made.

According to the figures herein given the number of variations of the different sizes of squares that have been considered increases as follows:

3×3 square	1
4×4 "	4,352
5×5 "	115,200.

NOTES ON NUMBER SERIES USED IN THE CONSTRUCTION OF MAGIC SQUARES.

It has long been known that magic squares may be constructed from a series of numbers which do not progress in arithmetical order. Experiment will show, however, that any haphazard series cannot be used for this purpose, but that a definite order of sequence is necessary which will entail certain relationships between different members of the series. It will therefore be our endeavor in the present article to determine these relationships and express the same in definite terms.

Let Fig. 31 represent a magic square of 4×4. By rule No. 4 in the "New Analysis of Magic Squares" it is seen that "*the sum of the terms in any two contiguous corner cells is equal to the sum of*

the terms in the two middle cells in the opposite outside column. Therefore, in Fig. 31, $a + d = v + s$, and it therefore follows that $a - v = s - d$. In other words, these four quantities form a group with the interrelationship as shown. By the same rule (No. 4) it is also seen that $a + t = l + p$, and hence also, $a - l = p - t$, giving another group of four numbers having the same form of interrelationship, and since both groups have "a" as an initial number, it is evident that the increment used in one of these groups must be different from that used in the other, or duplicate numbers would result. It therefore follows that the numbers composing a magic square are not made up of a single group, but necessarily of more than one group.

Since we have seen that the term "a" forms a part of two groups, we may write both groups as shown in Fig. 32, one horizontally and the other perpendicularly.

Next, by rule No. 5, it is shown that "*the sum of the two end*

a	b	c	d
g	h	k	l
m	n	o	p
t	v	s	y

Fig. 31.

$a - v = s - d$
l
p
t

Fig. 32.

$a - v = s - d$
$l \quad o$
$p \quad k$
$t \quad b$

Fig. 33.

$a - v = s - d$
$l - o = n - g$
$p \quad k$
$t \quad b$

Fig. 34.

terms of any inside column (either horizontal or perpendicular) is equal to the sum of the two middle terms in the other parallel column." It therefore follows that $v + b = k + o$ or $v - o = k - b$. Using the term v as the initial number, we write this series perpendicularly as shown in Fig. 33. In the same way it is seen that $l + g = n + o$, or $l - o = n - g$, thus forming the second horizontal column in the square (Fig. 34). Next $p + m = h + k$ or $p - k = h - m$, forming the third horizontal column and in this simple manner the square may be completed as shown in Fig. 35.

It is therefore evident that a 4×4 magic square may be formed of any series of numbers whose interrelations are such as to permit them to be placed as shown in Fig. 35.

The numbers 1 to 16 may be so placed in a great variety of ways, but the fact must not be lost sight of that, as far as the construction of magic squares is concerned, they only *incidentally* possess the quality of being a single series in straight arithmetical

rder, being really composed of as many groups as there are cells
a column of the square. Unless this fact is remembered, a clear
onception of the quantities of the series cannot be formed.

In illustration of the above remarks, three diagrams are given
Figs. 36, 37 and 38. Figs. 36 and 37 show arrangements of the
umbers 1 to 16 from which the diverse squares Figs. 39 and 40
re formed by the usual method of construction.

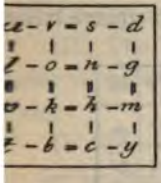


Fig. 35.

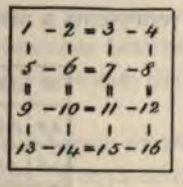


Fig. 36.

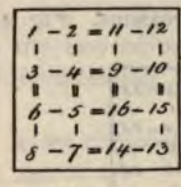


Fig. 37.

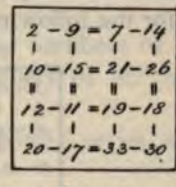


Fig. 38.

Fig. 38 shows the arrangement of an irregular series of sixteen
umbers, which, when placed in the order of magnitude run as
llows:

2-7-9-10-11-12-14-15-17-18-19-20-21-26-30-33

The magic square formed from this series is given in Fig. 41.

In the study of these number series the natural question presents
tself: *Can as many diverse squares be formed from one series as
rom another?* This question opens up a wide and but little ex-
plored region as to the diverse constitution of magic squares. This

1	14	15	4
8	11	10	5
12	7	6	9
13	2	3	16

Fig. 39.

1	7	14	12
10	16	5	3
15	9	4	6
8	2	11	13

Fig. 40.

2	17	33	14
26	19	11	10
18	21	15	12
20	9	7	30

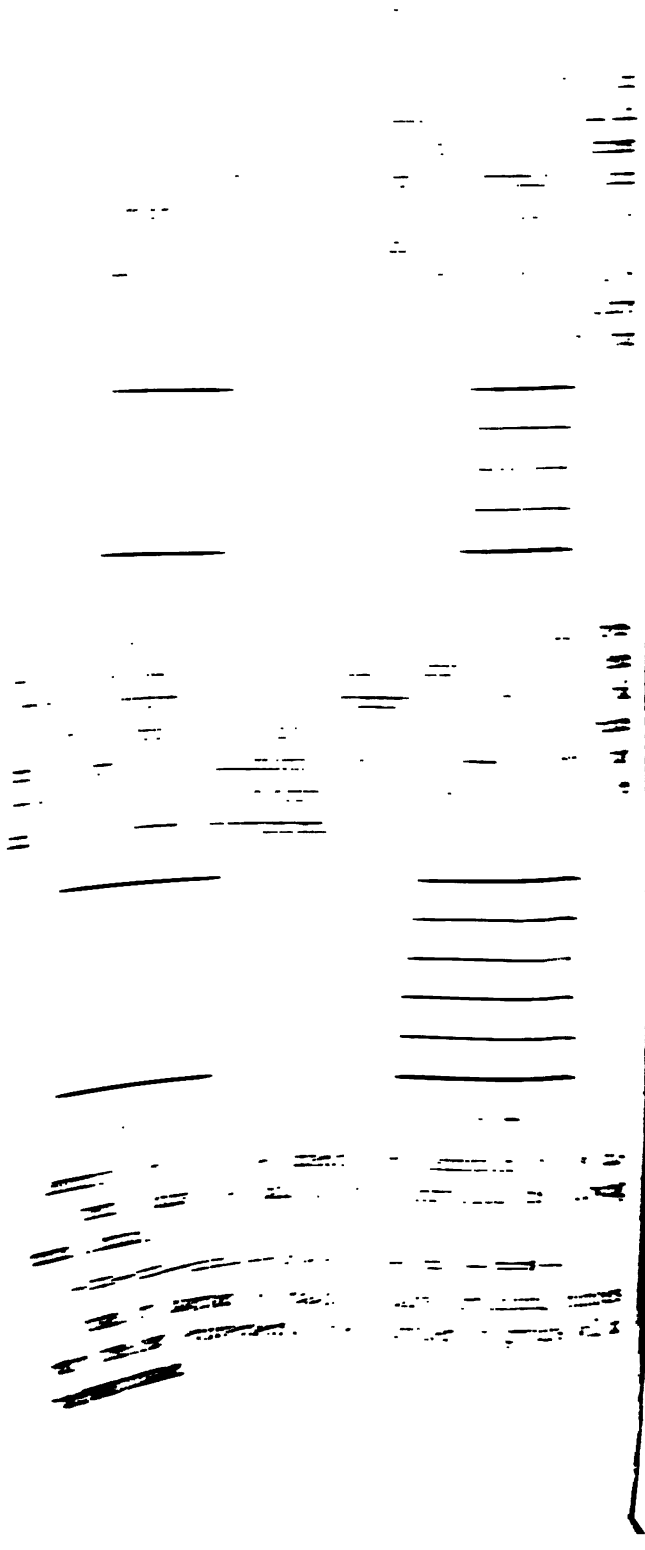
Fig. 41.

1	11	6	16
14	13	4	3
7	2	15	10
12	8	9	5

Fig. 42.

dea can therefore be merely touched upon in the present article,
xamples of several different plans of construction being given in
lustration and the field left at present to other explorers.

Three examples will be given, the first being what is sometimes
rmed a "perfect" square, or one in which any two numbers that
e geometrically opposite and equidistant from the center of the
uare will be equal in summation to any other pair of numbers so



The multiplicity of algebraical signs necessary in our amended agram is so great that it can only be studied in detail, the complete agram being a network of minus and equality signs.

The result will therefore only be given here, formulated in the llowing laws which apply in large measure to all "perfect" squares.

I. Perfect magic squares are made of as many series or groups numbers as there are cells in a column.

II. Each series or group is composed of as many numbers as re are groups.

III. The differences between any two adjoining numbers of a ies must obtain between the corresponding numbers of all the ies.

IV. The initial terms of the series compose another series, as the second, third, fourth terms and so on.

V. The differences between any adjoining numbers of these ondary series must also obtain between the corresponding terms all the secondary series.

The foregoing rules may be illustrated by the series and perfect are shown in Figs. 36 and 39.

Following and consequent upon the foregoing interrelations of se numbers is the remarkable quality possessed by the "perfect" gic square producing series as follows:

If the entire series is written out in the order of magnitude and differences between the adjacent numbers are written below, row of differences will be found to be geometrically arranged each side of the center as will be seen in the following series en from Fig. 43.

3-4-13-14-18-19-21-22-28-29-31-32-36-37-46-47
1 9 1 4 1 2 1 (6) 1 2 1 4 1 9 1

In the above example the number 6 occupies the center and the er numbers are arranged in geometrical order on each side of it. s the belief of the writer that this rule applies to all "perfect" ares whether odd or even.

The following example will suffice to illustrate the rule as lied to a 5×5 magic square, Fig. 45 showing the series and . 46 the square.

4.7.8.10.11.13.14.15.17.18.20.21.22.24.25.27.28.29.31.32.34.35.38.41
3 1 2 1 2 1 1 2 1 2 1 | 1 2 1 2 1 1 2 1 2 1 3 3

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UNIVERSALITY THE GROUND IDEA IN ETHICS.

The goal of all our thinking is some form of unity. Our data are always manifold, at least as soon as we actually become conscious of them; and the invariable impulse, whether in the service of practical ends or of theoretical ideals, is to seek their unity. Both science and philosophy embody this impulse. Science has glorified as its supreme achievements such approximations to unity as the laws of correlation of energy and indestructibility of matter. Philosophy may almost be defined as the search for the one in the many; and some form of monism has always been esteemed to be philosophy *par excellence.* We must believe that this native and inexpugnable impulse of our thought is in the deepest sense a copy or image of the real ultimate character of the universe. We strive for unity and the bond of things because the whole is one, and we belong to the one. In the terms of mysticism or devotion, we are simply yearning back toward our origin in the Divine Unity.

The idea of universality as the fundamental conception of all ethical truth seems to grow upon one as he contemplates more and more widely the field of ethical life. This idea is foreshadowed in the earliest and most elementary formulas of moral precept, negatively in Cain's guilty and bitter question, "Am I my brother's keeper?"—which the very asking shows to be no question, but rather a revolt and impotent opposition against what broke even upon a half savage mind as truth. All the precepts of moral sages, even the earliest, contain a central core of universality; just as all are summed up in the Hebrew "Love thy neighbor as thyself," and the word of the greater Hebrew, "Whatsoever ye would that men should do unto you, do ye even so unto them."

Ethical universality may be presented under three phases, those of *law, interdependence,* and *love.*

Law is the form in which universality first comes to consciousness in the race. Duty, righteousness, the moral life, are first entirely matters of law. This deed is right because it fits the eternal sanctions, the other is wrong because it contradicts them. Nay, right appears in a yet more primitive form than that of eternal and divine sanctions, namely the law of the king or chief, the expressed will of a seen and directly known power. But the idea of law soon transcends this particularity, as it must, by its very nature, transcend every limit to its inner and essential universality; and law presently

stands not for the will of any individual man, not even the king, but for the will of the eternal and all-ruling deity, for the "Thus saith the Lord!" Just here we must note, after Hegel, that the mere historical growth of this stage of universalization is of no fundamental interest. No doubt we may speculate that the law of the king's will passed through the death and apotheosis of the king into the law of the invisible and eternal One. The mere path by which law travels from its incipient imperfection and particularity towards its real and ultimate universality is of no deep import; it could as well, we must suppose, have taken a thousand other routes. The vital thing is the destination, or perhaps we should say the direction, of the movement.

The deepest essence of law in all its formulations and on all its stages is universality. We must not suppose that the lower forms of law are marked by any other distinguishing feature; it is always universality which makes law. A law in morals is something which is valid for you and for me, and for all others who are not explicitly exempted; that is, who do not escape from the law by some element in their relation to it. The imperfection in the law affects only the degree of scope of the universality; a lower form of moral law is due to a lower degree of insight. The earlier law exempts the king and the nobles, not by attacking the law itself, but by elevating the aristocrats above its reach, that is by marking them not mere men, but in a sense divine. Higher civilization consists in closer scrutiny of these claims to exemption. In fact, the very exemption is of the essence of the law, and so cannot injure its universality.

The sanctions of a law are at first inarticulate. That is, the moral stage in which morality is embodied in laws is, as it were, the childhood of moral theory and practice. Two great difficulties arise: first, that of the injustice of laws in their particular application, or rather the injustice of the formulations of the laws to which men have attained. Such knots arise most abundantly in even the earliest stage, when the king's word is law. The king pronounces, and alas! the law falls with fatal effect upon his friend or favorite; as, for example, in the myths of Jephthah or Daniel. Or laws seem to clash in irreconcilable opposition, as in the Antigone. From all this, repeated a thousand times, arises suspicion and not seldom revolt; an example of the latter is one element of the Greek sophists. And this leads to the second great difficulty as to laws, the inquiry into their *sanction*. It is evident that so long as the king lives, or belief in the divine author of laws is unshaken, no such inquiry can

arise; but the invisibility of the author, and more especially the conflict of the laws stimulates doubt and scrutiny. This inquiry leads to many forms of theory for sanction. We are here concerned with two ideas which seem to us representative of all that can be adduced in defence of laws, or rather of morals, and which are of the essence of the universality which is the basis of the laws and of the greater morality which is shadowed forth in the laws. These two ideas are interdependence and love. Both of these may be described as facts; both are in part and originally data; but they are both in need of enlargement and extension by means of postulation, or we may say faith, before they can function as sanctions in any complete manner.

First, then, interdependence.

If two things lie under one law they must exist under some common condition or in some organic relation. Interdependence emphasizes the organic relation; indeed it might be called interaction, for we soon learn to seek and find in all relations of interdependence an underlying, half hidden interchange of force or energy. Even relations apparently inert, as a stone resting upon the earth, turn out on scrutiny to be most attractive. Every molecule of stone and soil is thrusting and struggling, and what seems mere one-sided and stolid dependence is really an active and mutual interaction.

Now all our growing knowledge of the universe is an increase in our knowledge of interaction. Every new fact of science is a new piece of interaction. This is eminently true in anthropology in the large sense of the term,—the study of physiology and psychology lead to embriology and heredity, and to sociology. Body and mind are transformed by thought. What but now seemed to be stark individuals turn out to be of one piece and texture with all being, and in momentary commerce with all the elements. Consider the body. There it stands, erect, touching the earth but lightly, moving freely from place to place, leaping, walking, running. But take away for one instant that most universal of all laws of matter, gravitation, and that body, which seemed so self-sufficient, would do we know not what,—burst, dissolve, dissipate, without that pressure of the air, thrusting fifteen pounds upon every square inch, it could not hold together. Air to breathe and food are only less instantaneous, not less imperative indispensables. Indeed, when we call in chemist and physiologist to instruct us, we learn at once that the body is part and parcel of the great machine of the physical universe and is in constant, never-relaxing interaction of force and motion with the

world of nature. Its very constituent molecules are in momentary flux to and from the surrounding air and space.

Only more fascinating and convincing is the study of the real status of the man,—more strictly speaking, the inner man or mind. A glance at one's own soul reveals no isolated individual. I find in *my* mind father, brothers, wife, friends, home, country, and the heroes and sages of times past. I perceive that were it not for Homer and Socrates, Shakespeare and Bunyan, Lincoln and Gladstone, to say nothing of names less shining but more familiar and intimate, I should simply not be! It would actually seem that the interaction of the physical world has risen to a higher stage here, it has become *identity*. The old hero said, "I am a part of all that I have seen." In truth, we are all composite of all that we have seen, and chiefly, so far as we are men, and not mere intellects, we are made up of those souls whom we have known.

This is the indispensable foundation for any ethics. If a man were an isolated, self-complete and self-sufficing thing, walking apart, as it were, there were no conceivable reason in ethical relations or moral obligation. Only because we are all of one piece, of one stuff, in ceaseless and deep-seated interaction, are we bound by common law of mutual obligation.

But if the social body had been compelled to depend upon the intellectual conception of interaction and mutual dependence for a system of morality and righteousness, there never would have been any social system, and that for two reasons: first, the knowledge would have come too late, or rather, it could not have come at all; for such high intellectual progress is possible only after the long process of actual moralization of society, and hence as a consequence of that for which it is proposed as a basis. In the scheme of things another agent was provided, namely the immediate perception or sensation of the identity between each man and his fellows. This agent we call love, or sympathy. Here we may remark that all through the history of the science of ethics, while the sages have been engrossed and too often disputing over the philosophical sanction of morality, the saints, of all types, eminent, and obscure, in caves and hermitages, or in the maelstrom of life, have been calmly and completely assured, in heart and life, if not in intellect, that this love is the all-sufficient guarantee of all the moral laws. And since they found love among the all-certain things in their inmost hearts, they have not been anxious to base it upon any philosophy, but have rather built their philosophies, if any, upon the datum of love; or

at the very least, have required the theory of being to square itself by the principle of life.

To return to the disabilities of the theoretical knowledge of interdependence,—we have said that this knowledge would have come necessarily too late, being itself one of the fruits of a social state already well developed. Its other disability is just as complete—it is utterly impotent to do the work. It is an intellectual conception, and as such it lacks the very driving force which is indispensable in a sanction; not indeed in a philosophical sanction, whose only function is to explain, but in a practical sanction which need not so much explain, indeed does not explain in any scientific sense, but must *impel*. We have called love the sensation or perception of the social interdependence or identity, but it must be remembered that this agent is like all sensations commonly so-called, essentially *motor* in its nature. It impels, often with only the vaguest and most obscure illumination of the reason. It has its first origins and shows all its essential qualities in those blind instincts of the mere animal, like mother love in bird and beast.

We cannot but wonder at the comparative neglect which the philosophical moralists have shown toward love. Perhaps we may not blame the ancients, since the practical idea of love was so imperfectly developed, and we must agree with Hegel that no philosophy can anticipate its own time. But surely the ethical thought of the Christian era should have penetrated more deeply into the nature and ethical function of this central ethical experience,—for such love is, all apotheosis of duty to the contrary notwithstanding, even that of the immortal Kant included. The practical moralists, the saints properly and broadly so-called, have recognized the principle, as we have already remarked.

We would not pretend to any deep or final utterance on this great theme, but must add one word of supplement and as it were correction to what we have already said of love. We have called it the immediate perception of our mutual dependence and identity, but really it *is* that very dependence and identity,—as indeed every perception *is* the thing perceived. Love is the bond or unity of which all laws of morality and all formulas of universality are partial struggling expressions.

We may venture then, in conclusion, to indicate in such vague manner as is possible the relations of the three forms or phases of universality: law, interdependence, and love.

Law is the striving of the human spirit to set forth and express

in terms of conduct, of practical reason, to use the honorable and useful Kantian term, the inner, real unity of human beings. Its essence is always this universality; its accidents are the effect of varying degrees of insight into the meaning and validity of the terms in which the law is expressed; especially in its interpretation of external and individual human relations to which the law must take attitude.

Interdependence is the conception of the unity after the type of our intellect; that is, in terms of the speculative reason. Hence this conception is much influenced by the methods and ideals of our general science and philosophy. This conception sets the type for all really explanatory ethics. It seems clear that no theory of duty and the moral law can be competent which does not construct some consistent and reliable conception of unity among those who are mutually bound by the chains of duty.

Love is the reality of which these, law and interdependence, are formulas and theories; or in another view love is the immediate *gift* or knowledge of the reality, a gift without which the very beginnings of moral and social life were unthinkable.

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THE ENDEMIC RELIGIOUS INSANITY OF THE ISLAND OF ST. VINCENT.

In the island of St. Vincent, West Indies, has been prevalent for some years a system of religious exercises practiced by a sect commonly called the "Shakers." The devotees speak of themselves as the "Converted" or the "Penitents."

It must be understood that these people do not profess or hold any distinctive doctrines. The fundamental idea of their worship is the necessity for "Conversion" in the sense taught by the Wesleyans, Salvation Army, Plymouth Brethren and other allied forms of Christianity. They do not aim at establishing an independent sect, nor do they count themselves as separated each one from his Church.

The chief teacher, Brother Ragguet, expressly repudiates such an idea. He preaches repentance and contrition, but directs every one to cleave to his own religious body. He holds that all churches are true except that of the Seventh Day Adventists, whom he calls

"Babblers vexing the Church." The teachers of the Penitents profess only to guide the sinner to repentance, to assist him in obtaining forgiveness and peace, to correct him for lapses and to keep him in possession of the right spirit. Among the members therefore are persons belonging to the Anglican, Wesleyan, and Presbyterian bodies.

There is nothing reprehensible in all this in theory. In fact, however, the fascination lies in the emotional excitement produced by the rejoicing at the possession of salvation and in that psychical erethism, which in so many forms of religion is attributed to divine inspiration. The doctrine of conversion and the resulting states of mental exaltation have been long familiar to the negroes through the Wesleyan revival meetings.

The practices of the Penitents are thus a direct outcome of Wesleyan Methodism; and their extreme manifestations do not surpass the excesses to be seen at the Wesleyan revival meetings in Tortola in the Virgin Islands. The emotional phases of Methodism are, I believe, now-a-days deprecated by most ministers and cultured adherents of that Church. But they are unhappily so natural to the temperament of the uneducated and hysterical negro race, that this spontaneous adaptation of them by the St. Vincent Penitents finds a fertile soil for its spread.

As far as the writer can ascertain Brother Ragguet has been the greatest exponent of the methods of the Penitents. Charles Kingsley mentions the existence of Shakers in St. Vincent, and Ragguet and Mrs. Baptiste, the two most venerated teachers of this day, admit having received their ideas from a former teacher. The writer has cultivated the acquaintance of Ragguet for some time with the view to learning somewhat of the inwardness of the movement. He is an albino negro of hideous appearance. His face and neck are covered with freckles and incipient rodent ulcers, and he has a well developed epithelioma on the cheek. This he has not yet been persuaded to part with.

Mentally he is a typical mattoid without education. His manner is intense and earnest, his eye insane, his voice loud and strident. He presents the megalomania of the mattoid, the oneness of idea, the persistence of purpose, the power of influencing the masses. He will not wear shoes because the angels do not. He says he is "the Apostle of the Work" in St. Vincent. "I am an angel upon earth," he said to the writer with all seriousness. He prophesies. He claims to have prophesied the earthquakes and volcanic eruptions

of 1902; and the peasants and some better than they believe him. Ragguet is not now in communion with all the Penitents of the island; he disapproves of the pretensions of most of the teachers. He only affords his countenance to two of the "praise-houses," but preaches in the streets and market-places.

The whole system as carried out in St. Vincent is no doubt the product of an evolution and was not devised by any one person. There are perhaps differences of detail in the methods of the teachers. But as teachers and members very frequently visit from place to place to assist at meetings, the practices must be fairly uniform. The songs used are certainly so.

Services are held every Sunday night in "praise-houses," of which there are over twenty in the island. These places are thatched huts with open sides and hard trodden earth floor. Any one may attend the meeting and join in the singing and rejoicing. Where there is a large membership or in the neighborhood of a teacher there is a "penance house," commonly with two apartments for the separation of the sexes, or there may be two huts. One informant, a policeman, affirms that he once entered a penance house and found several persons of both sexes asleep, worn out, he conjectures, by their prayers. When the penance house is occupied a white flag is shown on a staff.

Every person desirous of joining the membership must spend a period of "moanin" in the penance house. He is then said to be "on the knee" or "bruising the knee." Each candidate brings three shillings in cash, some candles and a bottle of olive oil. During the whole time of "moanin" (probably corrupt for "mourning") the candidates remain in the penance house. An attendant, who for the females is called a "nurse," prepares their food. Only salt fish, plantains, olive oil and bread are allowed.

On their admission the teacher comes to "point" the candidates. They stand in a row with the elbows bent and the palms upwards, Each has a lighted candle before his feet. Absolute silence is enforced and the initiate gazes at the candle and abstracts himself to "pray in the heart." When weary he may kneel and rise again. Thus he may remain several hours on end. He usually "goes from himself" while so standing.

Each day this is repeated. The rest of the day is supposed to be devoted to meditation. At night the initiates lie flat on their backs. It is admitted that conversation does take place, but it is not supposed to, and they believe that the teacher by his power knows of it.

Occasionally the teacher visits to pray with and counsel his disciples. It is stated that the teacher sometimes visits the females at night, but a converted woman in describing her experience says the nurse always came in with the teacher.

The hypnotic intent of the process of "pointing" is obvious, as well as the silence and mental abstraction enjoined. It is astonishing that so effectual a method could have been unconsciously evolved.

The negro seems to be more readily influenced by suggestion than the white. The writer finds 87 per cent. of pure negroes are hypnotized at the first attempt by the methods of Nancy, as against 80-84 per cent. susceptible at all in the experience of European hypnotists.

If a disciple has offended his parents it is supposed that he is continually confronted by them in his visions, and can make no progress until he returns home and gets their forgiveness. Also one still under the control of his parents is not supposed to be received without their consent.

The process of initiation is commonly thought to last nine days, but it really goes on till the initiate hears a voice say, "Go thou in peace and sin no more." He cannot leave until thus dismissed in peace, and this often takes two or three weeks and has been known to take six weeks. The teacher is believed to be aware by occult means of the exact moment the words are received, no matter how far off he may be.

During the period of "moanin" one reviews all his sins and repents of them. He "travels" in visions. The presence of his teacher is not necessary for these visions, which usually take place at night. One sees places and persons unknown before. He may learn to speak in the unknown tongue, and it is supposed that those able to read and write learn this more readily. This tongue the converted pretend to understand, but say it is not lawful to speak it except at meetings. The initiate in his visions may have the power of second sight; he may see some one stealing, but does not speak of it, for that would needlessly put the culprit and his family to shame. A penitent thus describes one of his visions. "I thought I was on my back on the sand praying when there appeared a ship flying through the air. I asked to be taken on board and the ship backed and came to rest near me. As I stepped on deck the ship started gliding on the surface of the sea with marvelous swiftness. We came to another shore and I landed and went up a hill. I met three persons

who said they were called Adam, Eve, and Joshua. I then saw a goat coming and as it came near I saw it was marked with blood on the flank. It grazed on the pasture grass; then suddenly it changed into a woman nursing an infant."

In another vision he saw the District Medical Officer riding in a valley accompanied by his groom. They met a girl carrying fish, and when the girl would not sell, took them by force. The dreamer knew the girl and afterwards asked her about the incident but she said it had never occurred.

One of the converted mentioned that one member could know another "after he had understanding." On being pressed she admitted that there is a pass-word which is given at the penance house. Had an opportunity of private interview presented, the writer feels sure he might have elicited the word and tested its efficacy.

After coming "off the knee" the initiate wears a white band round his head for a month. He must keep to the same diet for nine days and during this time also he may not work. Every day at noon he should be at home to "rejoice." If that hour finds him away from home he must rejoice on the road or on the shore. Thus small parties are occasionally seen in the high-way in the country jumping together and shouting "Hip Houi."

The new member goes to the first meeting after his return home and on this occasion should sing a song which he has received in his visions or composed. Some of these chants catch on and form the hymnal of the sect. A few examples are given below.

In charge of every station with a penance house is a "teacher." These are credited with the power of second sight to the extent noted above, and also to the extent of knowing the backslidings of their members. At a smaller center there is a leader to conduct the meetings. Some one who professes that gift is a "spirit prover." He scans the members while working to note whether each has the right spirit. There is the "Holy Spirit" and the "Spirit of Antichrist." Another officer is called the "surveyor." It is difficult to get a clear idea of his functions; he is said to "survey the ground" before working begins. He certainly marks lines on the floor with chalk and some signs.

A meeting begins like an ordinary Wesleyan prayer meeting. Some pray, the leader starts hymns. The prayers at this stage during the meeting were considered appropriate and seemly by a Wesleyan minister. As the night goes on the members are warmed up; at the fit time the surveyor, it seems, marks the floor with chalk

and then the working begins. All jump together and shout "Hi Houi" in unison incessantly for hours. Some dance round with th usual erotic postural motions of the negro dances. Some speak " tongues." Some in frenzy climb into the rafters of the building on trees. An informant saw a man rush blindly from the prais house, fall down a steep bank and get up as if nothing had happene and rush away madly into the darkness. After a while he returne quiet. This frenzied shouting and dancing always takes place. is called " working the spirit." On some occasions all the membe form a procession round the room stooping forwards and shoutin and jumping. This is called "riding Zion's donkey." Almost in variably one or more persons fall to the ground unconscious an writhing convulsively. If a woman falls some one ties her dres round her legs. This was found to be necessary to prevent th women exposing themselves.

It is claimed by the converted that if a member is in the righ way he is never thrown down by the spirit. Outsiders joining i the rejoicing and members who have "fallen out of line" are s afflicted. Those that get the right spirit may jump and shout in th same spot all night.

Ragguet repudiates the idea that the spirit of God can cast person grovelling and kicking on the ground. That he says is devil. If a member falls his teacher flogs and beats him for hi sins. Mrs. Baptiste who next to Ragguet is the most reverence teacher jumps astride of the offender riding and pommeling him It is said that a backslider so convicted may be sent back "on th knee." It appears that sometimes when a worshiper is seized wit this convulsion the teacher places a lighted candle at his head an marks a cross with chalk at his feet, and then all pray till he come round. This perhaps is done in the case of contrite persons not ye admitted to the membership. Smoking is absolutely prohibited a meetings. It is abundantly attested and admitted by members tha tobacco smoke throws any one who has the spirit into convulsions A Wesleyan minister saw a penitent under these circumstances rus forward and fall, nearly smashing his head against a post.

This scene of frenzied excitement usually lasts till 3 or 4 a. m. but has been known to continue till 9 a. m., say about twelve hours.

The power of Mrs. Baptiste is instanced in the following incident. While all jumped and shouted, her victim, a strong tall man, stood stock still trembling, and she danced round him. She marked the ground round his feet and placed a lighted candle be-

fore him. Then she ran a little way from him and back behind him. He fell to his hands and knees, and she leaped on his back riding him and sticking her elbows into his ribs. She reproached him with his faults "that frock you give that woman you should have given your wife" and so on. When she visits the village of Barrouallie some will not go to meeting, for when many have fallen in convulsions she leaves them to come to as they may.

If a member is conscious of sin, on entering the praise-house, he may go to each corner, mark the post with chalk and say a prayer. He thus makes atonement and may join in the working and get the right spirit.

When a member dies there is a prayer meeting held. Next night there is a wake, and on the ninth night a special meeting which is particularly fervid. The spirit of the departed brother is supposed to be present assisting.

On Easter and Christmas mornings the members at some country places march clothed in white and with naked feet and lighted candles.

From the above description it is evident that the psychical phenomena of Shakerism are due to hysteria and hypnotism and take their coloring from the religious enthusiasm of which they are a degeneration.

During the period of "moanin" the prolonged gazing at a light, together with the silence and mental abstraction, naturally produces hypnotic sleep. The attitude of expectancy determines the form of the dreams and explains the uniformity of the experience of the candidates in this state. The objectionable feature is of course the abuse of hypnotism, which increases the susceptibility of the subject to suggestion and enhances the tendency to hysteria. It may be questioned also whether the influence of the teachers acquired by these means and the slavish credulity of the converts are desirable elements in the mental life of the people.

The phenomena of the rejoicing are those of many of the epidemics of insanity, which from the earliest times have been known to spring from or be associated with religion. The leaping and shouting, the delirium and incoherent ejaculations, the flagellations and convulsions all have their parallels in the history of epidemic insanity.

We pass over the frantic rites in the worship of Cybele and Bacchus. Among Christian sects the Massabiani described by S. Epiphanus leaped wildly; the Acefales howled and barked in the

streets of Alexandria; the Flagellants starting from Perugia in 1260 spread their infectious madness over all Europe; flagellation characterized the religion of the Zaccharys of Abyssinia. The dance of S. Vitus affected Western Germany during the fourteenth and fifteenth centuries. It is described as "a convulsion which infuriated the human frame in a most extraordinary manner....the Bacchantic leaps by which it was characterized, and which gave to those affected whilst performing their wild dance and screaming and foaming with fury, all the appearance of persons possessed."

This picture is reflected in many epidemics of that class to which Shakerism belongs and which are entirely religious in intent.

There may be instanced the Convulsionaries of Paris in 1731; the Barkers and Jerkers of America in 1798 to 1805, and the Revivalists of Ireland whose affliction resulted from the revival meetings; the epidemic of religious enthusiasm in Sweden in 1841; the Velonandrono of Madagascar as late as 1900; and the Dancing Dervishes.

Similar manifestations on a smaller scale and therefore more analogous to the case of St. Vincent are the Lata of Java, the Ikota among the Samoyede women, and the performances of the Klikuschi of Kursh, and of the Holy Rollers of Oregon in 1903.

All these endemic and epidemic affections like that in St. Vincent are characterized by a hysterical choreic or convulsive activity in companies, with wild incoherent speech, temporary unconsciousness of pain and surroundings during the paroxysm, sometimes coma afterwards. They are produced by religious excitement and propagated by imitation.

It must now be considered what effects the practices of the "converted" have or are likely to have on the subjects. The candidates on their discharge from the penance house are observed to be for some time in a dazed stupified condition. This is in part due to that preoccupation of mind which, as noted by Starbuck, often occurs during the conversion period of young persons. But in the penitents it would be undoubtedly accentuated by the repeated and prolonged hypnotism they have undergone.

It has been asserted that a large proportion of those committed for lunacy in St. Vincent have been Shakers. No statistics are available in support of this, but a former dispenser at the hospital assured the writer he knew of three such cases, and a corporal of police stated he had himself been in charge of two such. It is certain that religion takes the most prominent part in the coloring if not

also in the causation of attacks of insanity among West Indian negroes. The writer has observed that "penitents" are prone to hysterical activity when taking chloroform. Under the influence of the drug they shake the body and limbs rapidly or try excitedly to leap from the table after the first few whiffs of the anæsthetic. That epidemics of religious enthusiasm tend to produce individual attacks of persisting alienation, especially of hysterical insanity, is well known.

Dr. Gasquet in this relation says:

"But the influence of religion as an exciting cause of insanity is far more important in its action on masses of men than on individuals.... This injurious element appears to consist in encouraging cries and groans, dancing and contortions, in short bodily manifestations of any kind which are propagated by imitation."

It is certain that the exercises of the St. Vincent penitents do not lack this injurious element, besides the fact that the manifestations have become epidemic in the community and habitual in the individuals. The effect of repeated and prolonged indulgence in the orgies of frenzied emotionalism is in St. Vincent intensified by the degeneration of the nerve system of a population saturated with syphilis to an extraordinary degree.

Objection has been taken to the meetings of the penitents on the ground of the opportunities they afford for immorality. While the "penitents" do not affect marriage any more than do the rest of their class, and some even of the teachers are living in the concubinage natural to the negro peasants, yet it is certain that continence is enjoined and expected from the candidates. A member has been heard to reprove another for kissing his sweetheart before coming to meeting. He warned the culprit that he would get "a lash," and this actually happened, for he was overtaken by convulsions and accordingly soundly flogged as a backslider, while in that state. The writer has not been able to gather any evidence of immoral practices in connection with penitent services.

The close association between the erotic and religious feelings is so well established that it is not necessary here to do more than indicate this danger in the words of von Kraft-Ebing. He remarks "how powerfully sensuality expresses itself in the histories of religious fanatics, and in what revolting scenes, true orgies, the religious festivals of antiquity, no less than the 'meetings' of certain sect in modern times express themselves.'.....

"Owing to the correspondence in many points between these

two emotional states, it is clear that when they are very intense the one may take the place of the other, since every manifestation of one element of mental life also intensifies its associations."

This applies with particular cogency to the negro race, in which the sexual passions are stronger and the emotions at the same time more readily stirred than in white races.

When we consider also that in an uneducated class the powers of inhibition are deficiently trained, we arrive at the inevitable conclusion that the "rejoicings" of the penitents must very frequently end in episodes of sensuality.

While considering the similar manifestations of the Wesleyan Revivalism in Tortola, the writer was assured by the Registrar of Births that a noticeable rise of birth-rate took place nine months after the yearly season of revival.

One case has come to the writer's knowledge of a girl, who, becoming pregnant immediately after joining the penitents, continued to participate in the delirious jumping and was overtaken by a fatal abortion. This is a real danger, but perhaps not an important one.

On consideration of the foregoing facts and opinions, the question arises, is it not the duty of the Government to attempt to suppress or lessen a practice which it appears is prejudicial to the well-being of the community?

In facing the problem the Government will certainly be met with the cant cries of "freedom of worship" and "liberty of the subject." These terms have become fetishes of the British people and are hard to ignore. But it is well to consider if it is not erroneous to apply the principles of legislation belonging to the twentieth century to a community which in effect still lives in the Middle Ages.

There does not seem to be any less reason for limiting the spread of mental infection by interfering with the individual liberty than for isolating a smallpox "contact."

At the present day also religions are not treated by students with any more reverence than they are individually entitled to, after being subjected to rational analysis.

Sir A. Helps enunciated a principle that a country is not free in proportion to the liberty of the individuals to act as they please, but in respect of the protection the majority enjoyed from the will or power of the individuals to do harm.

The hymns of the "Penitents" mentioned above are rather de-

of meaning and consist mostly of conventional religious ejacu-
s and cant phrases. They are of psychological interest, how-
as they illustrate the lack of mentality better than any descrip-
They are soon corrupted so as to contain even less meaning
sung. The examples given below are taken down from per-
accustomed to sing them. No. 7 was direct from the original
oser.

1

"Oh come a' we go a happy lan',
Happy lan', Happy lan'
Come a' we go a happy lan'
Happy lan' of Canaan.
Weh milk an' wine an' honey deh
Honey deh, honey deh,
Weh milk an' wine an' honey deh
Honey deh a Canaan."

2.

"I heard a voice, believer, I heard a voice,
King Jesus bawl 'Glory hallelujah.'
You pray hard enough,
Glory hallelujah
You moan hard enough,
Glory etc.
You seek hard enough,
etc."

3.

"My dear companions, fare you well,
Glory of Victory!
I will not follow you to hell
Glory of Victory!
Blow, blow, trumpet of Sion, blow!
Blow, blow, trumpet of Sion, blow!
Glory of Victory!

4.

"Oh you see dem pipe smoker,
I ask dem weh dey bound to;
Dey tell me de wo'ld goin' ketch a fire,
Dey bound to dey promise lan'.
Oh you see dem rum-drinker,
etc.
Oh you see dem malice-keeper,
etc."

5.

"Moanin' Thomas weh you goin'?
To Alleluia, my Lord.
You mus' be clean wen you goin'
To Alleluia, my Lord.

You mus' be pure wen you goin'
To Alleluia, my Lord."

6.

"Walk in de light, for Jesus de light;
Walk in de light of de holy light.
Singing Alleluia. singing Alleluia
Of de holy light."

7.

"Wen me do moan, me one ah moan,
Alleluia, ring de bell fo' me!
Angel Gabriel very jubilee.
Alleluia, ring de bell fo' me!
Wen me do seek, me one ah seek,
etc."

8.

"Down in de valley weep an' moan
Praise God, honor, honor to his name!
Moses, Moses, take off dy shoe,
Praise God, honor, honor to his name!
De place you stan' is holy groun'
Praise God, honor, honor, to his name!"

C. W. BRANCH.

ST. VINCENT, WEST INDIES.

BOOK REVIEWS AND NOTES.

ZARATHUSHTRA, PHILO, THE ACHAEMENIDS AND ISRAEL. By *Lawrence Heyworth Mills*, Professor of Zend Philology in the University of Oxford. Chicago: The Open Court Publishing Co., 1906. Pp. xiii, 460.

The problem of the relation of Zoroastrianism, the religion of ancient Persia, to Greek philosophy and the faith of Israel is one of unusual interest, and to its solution more than one scholar has bent his energy. The names of Kohut, Stave, Söderblom, Böklen, Spiegel, Röth, and Gladisch at once recur to mind, especially as regards the supposed association of Zoroastrianism and Judaism. The question of the relation of the Iranian faith with Greek philosophy, on the other hand, received comparatively slight attention until the French scholar James Darmesteter formulated the theory that the Avesta was written during the early centuries after Christ and was profoundly influenced by Alexandrine philosophy. This theory, an unhappy aberration on the part of a great scholar, has found but little favor, and it is not impossible that he might later have modified his views, had he not been called away by death. Realizing this possibility, the majority of scholars have been content to record his hypothesis, and, without directly polemizing against it, to quietly supersede it by the almost obvious facts which render it plainly untenable. In view of the great services of Darmesteter to Iranian scholarship, this attitude seems eminently proper; notwithstanding this, Professor Mills deems the theories formulated by the French scholar not only erroneous but so dangerous as to call for a detailed refutation. To this object the first half of the volume under discussion seems to be devoted, and it must be conceded that the author has ably proved his contention and re-established the older hypothesis that Zoroastrianism was prior to the rise of Neo-Platonic and Alexandrine philosophy, and that it was, consequently, altogether influenced by it. Darmesteter based his theory in part on an alleged "letter of Tansar," supposed to have been written about 226 A. D., although the earliest form in which the document is extant dates from 1210. Around this Tansar a mass of tradition seems to have accumulated, for Mas'udi, a Perso-Arabic historian of the ninth century, terms him a "Platonist." The only fact certainly known concerning Tansar is that he "appeared with an exposition recovered from the Avesta, and was ordered to complete the scripture from that exposition. He did so accordingly, to preserve a similitude of the splendor of the original enlightenment in the treasury of Shapigan, and was ordered to distribute copies of the information provided" (Dinkart, in *SBE*, XXXVII, pp. xxxi, 414). The letter ascribed to this Iranian priest is plainly a literary embellishment of a kernel

which is probably historic. Parallels will readily suggest themselves from speeches recorded by classical writers. That Darmesteter should have given credence to so suspicious a document is indeed strange, and it is in itself significant of the weakness of his theory of the late origin of the Avesta. Taking up the letter in detail, Professor Mills distinguishes accurately between the historic and spurious elements in it. It is safe to say that the "letter of Tansar" will no longer be used as a serious argument in connection with the Avesta.

A far more serious problem is the question of Alexandrine influence on the Avesta, a theory also suggested by Darmesteter. In refutation of this hypothesis, Mills presents an elaborate study of the development of the doctrine of the Logos in Greek philosophy, paying special attention to the Philonian concept. One of the most noteworthy passages of Philo in this connection is his exegesis of Numbers xxxv. 6, where he explains the "six cities for refuge" as "the Divine Logos" (which he terms, however, a "metropolis" rather than a "city"), "Formative Power," "Kingly Power," "Power of Mercy," "the Legislative (city)," and "the Intelligible World." These "cities" Professor Mills compares in detail with the six Avesta Amshaspands, or "Immortal Holy Ones," Vohu Manah ("Good Mind"), Asha Vahishta ("Best Righteousness"), Khshathra Vairya ("Desirable Kingdom"), Spenta Armaiti ("Holy Concord"), Haurvatat ("Saving Health"), and Ameretat ("Immortality"). Admitting certain points of accidental coincidence, as is but natural, he shows conclusively that the divergencies both in detail and in spirit are far too great to admit of any influence of the one system of thought on the other. The Philonian Logos and "Powers" are essentially Greek, and the "Powers" themselves are rather demiurges, standing between God and matter, than the councillors and aids of the Deity, as are the Zoroastrian Amshaspands with regard to Ahura Mazda. The Amshaspands find their analogue, and, perhaps, their origin, in the Adityas and India, and they are ancient concepts, being, it may be suggested, primarily nature-deities. Nor does the Logos of Greek philosophy find any parallel in the Avesta, for the Philonian Logos is again a demiurge, while Vohu Manah or Asha, with whom the Logos presents occasional slight points of resemblance, works directly with Ahura Mazda in the active governance of the world. The concept of the demiurge, saving the Deity from contact with matter, is unknown to the Iranian mind. As Mills happily says (p. 119), "the Greek dualism was one between God and matter, whereas the Zarathushtrian was one between a good God and an evil God, each original and independent, matter not being regarded as in itself evil in any sense."

If the first half of Professor Mills's work is of special interest to philosophers, the second part appeals particularly to theologians. The contact of Persia with Israel was, politically at least, so close, that it has become the fashion, especially since the days of Kohut and Cheyne, to ascribe to Zoroastrianism the origin of the Jewish angelology and demonology. In considering the problem of the relation of the two religions, the author first shows the harmony of the Biblical edicts of Second Chronicles, Ezra, and Isaiah with the Babylonian vase-inscription of Cyrus. This text is well known and, taken in connection with the Old Testament and the Old Persian inscriptions, proves, it must be confessed, that Cyrus was, religiously speaking, little more

than a clever politician. The inscriptions of the Achæmenian kings themselves are subjected to a searching critique by Professor Mills, with the result that they are found to substantiate the statements of the Old Testament. This, however, is only what we should expect to find, especially in view of the author's excellent suggestion that the stereotyped phraseology of the Old Persian texts of Darius "actually cast more light upon the state of feeling at the time of Cyrus than the one extended inscription left to us by Cyrus himself has done" (p. 245). When, on the other hand, he advances the hypothesis that the Biblical phrase "Lord God of heaven" (e. g., Ezra, i. 2) implies that the deity of Cyrus was Deva, "He of the shining sky," it is difficult to follow him, for *daēva* (the Iranian equivalent of the Sanskrit *dēva*, "god") means only "demon." This, fortunately, does not interfere with the course of the argument presented by the author, particularly as Ahura Mazda, the supreme deity of the Iranians, and repeatedly mentioned in the Achæmenian inscriptions, was essentially a sky-god.

That the Iranian dualism was well developed at an early period is clearly shown, as Professor Mills points out, by the implied, though veiled, attack on this doctrine in Isaiah xlv. 6-7: "I am the Lord, and there is none else. I form the light, and create darkness: I make peace, and create evil: I the Lord do all these things"—an emphatic denial of the dualism which was a cardinal feature of Zoroastrianism, and which may have existed (although we lack specific data to prove the supposition) in Persia in the days of Cyrus and Darius. At a later period, pre-eminently in Gnosticism, dualism was fated to become a religious doctrine of wide acceptance. Yet is dualism in Judaism and Christianity necessarily Persian in origin? Did not the serpent strive against God in the Garden of Eden? If dualism found acceptance among the Jews and Christians, so that Satan is "the prince of this world" (John xiv. 30), it was, it may be suggested, because the germs were already present before the Jews came into contact with the Persians. The same statement holds good, it may be suggested, with regard to Satan as parallel with the Persian Ahriman, and also in respect to the Jewish angelology and demonology which many hold to be borrowed from the Iranians. Professor Mills touches comparatively lightly on these and similar problems, yet it would seem that he somewhat overrates Iranianism in its influence on Judaism. Nevertheless, his work marks a distinct advance. On the other hand, he might have made a more thorough study of the purely Semitic side of the Jewish religion, especially in its relations to Babylonia and Assyria, thus showing, perhaps, that certain elements in Judaism, supposed by many to be Persian in origin, are actually purely Semitic in source.

One of the most admirable sections of this important book deals with the moot question of the relationship of the Old Persian religion, as represented by the inscriptions of the Achæmenians, with the Zoroastrian religion. The majority of scholars incline to the belief that the Achæmenidæ were Zoroastrians, the present reviewer being one of the few who maintain that while these kings were worshipers of Ahura Mazda, there is no evidence to show that they were adherents of the reformed Iranian faith taught by Zoroaster. It is particularly noteworthy, accordingly, to find Professor Mills reaching the conclusion that, although there are many points of contact between the religion described in the Old Persian inscriptions and the Avesta,

"upon absolute identity we must not waste a thought" (p. 291), for the Zoroastrian and Daric creeds were distinct and separate (p. 329). Here, in discussing the parallelism in diction between the Old Persian inscriptions and the Avesta, attention might be called to the still more striking analogies between the phraseology of the Old Persian texts and the Assyro-Babylonian inscriptions, the latter exercising a strong influence on the style of the former. That Darius recognized the existence of a demonic opponent of Ormazd, as Professor Mills points out, is a view which cannot well be denied, and the Achæmenian monarch also knew the Amshaspands in all probability, especially if these archangels were originally nature-gods. The author's close analysis of the character of Darius, as revealed by his inscriptions, is likewise of exceptional interest.

The concluding pages of the book under consideration are concerned with an investigation of the date of the Gathas on the basis of internal evidence, a clinching of the argument of the earlier portion of the work. This date he sets between 650 and 900 B. C. According to Iranian tradition, which in this case, at least, seems to be well founded, Zoroaster, the probable author of the Gathas, was born in 660 B. C. and died in 583. While Professor Mills prefers the earlier date, the bulk of evidence seems to favor the latter. He is in accord, however, with the best views on the recrudescence of the popular Iranian faith after the subsidence of the reform inaugurated by Zoroaster. The final pages are, as the author says, an "apocopated report," and treat of the relations of Judaism and Zoroastrianism. This part of the book is not worked out in the detailed and profound manner which characterizes the admirable pages which precede it—it is, indeed, rather a collection of notes. Yet, if it is, as all will hope, a promise of good things to come, and the precursor of a new work from Professor Mills, so preeminently fitted by his mastery of the Old and New Testaments and of the Avesta and Pahlavi writings, there is a wealth of promise in these few pages. Nevertheless, here again the need of the study of Babylonia and Assyria must be emphasized, lest true Semitic elements in Judaism be interpreted as Persian, and some consideration should also be given to Talmudic and Midrashic literature. Again, is it not possible that Semitic (though not necessarily, or even probably, Hebrew) influences have been at work in the Avesta itself, vague and uncertain though these hypothesized factors may be? At all events, a complete study of the problem of the relation between Zoroastrianism and Judaism must take this contingency into account, even though it lead only to negative results.

Throughout the work runs evidence of intense enthusiasm for the subject and deep study of the theme. A worthy successor of the same scholar's editions and translations of the Gathas, it will take its place among the books which are indispensable to the student of Iranian thought; and more than this, *Zarathushtra, Philo, the Achæmenids and Israel* rightly emphasizes, for the first time in English, the importance of the Avesta and of the Old Persian inscriptions for the Christian theologian. LOUIS H. GRAY.

CHINESE MADE EASY. By *Walter Brooks Brouner, A. B., M. D.,* and *Fung Yuet Mow.* New York and London: Macmillan Co., 1904.

Chinese Made Easy is a book that will be welcome in many quarters, even among those people who never intend to go to China. Some years ago the

reviewer himself was forced into a study of Chinese by his interest in a comparative study of the development of human thought. The Chinese are in many obvious externalities so different from us; their methods of thought, their language and their customs diverge so much from ours that they seem to belong to another world with which we have nothing in common. The sad results of this strangeness which has been shown in the intercourse between the Middle Kingdom and all the Western nations without exception, are misunderstandings, quarrels, bloodshed, and a mutual distrust. Yet the Chinese are possessed of the same human sentiments, aspirations and ideas as we are. It is only the outside that differs, and a knowledge of their language has become imperative not only for commercial, political and other practical reasons, but also for theoretical considerations. We will understand ourselves better if we become acquainted with a parallel development which seems so different and yet at heart is the same.

Though the difficulties of studying Chinese seem at first sight to be insurmountable, in many respects the language is not so hard as the strangeness of its appearance would indicate. And here we have before us a very able attempt at making Chinese easy. Dr. Walter Brooks Brouner, with Fung Yuet Mow, a native Chinese missionary at his elbow, has succeeded in the compilation of a very handy text-book, which is almost sufficient to take the place of a school by correspondence, and which would actually be sufficient for students who study the Chinese for its literature only.

The reviewer who has had some experience in approaching the intricacies of Chinese script and language, regrets only that the book did not appear ten years ago, for it would have saved him many a weary hour and much search in the unwieldy Chinese Dictionary.

The present book is prefaced by no less an authority than Herbert A. Giles, M. A., LL. D., the author of the most recent and up-to-date Chinese Dictionary, and of a manual of Chinese literature and kindred subjects.

The contents of the book begin with lessons of easy words, such as a child may understand and remember at a glance,—such words as, one, two, three, earth, student, king, life, gem, man, begin, great, heaven, husband, etc., etc. We wish it contained also a few etymological explanations of the several Chinese characters such as the writer himself offered in his recent article on "Chinese Script and Thought" (in *The Monist*, Vol. XV, p. 271) and we hope that this desirable feature may find a place in a future edition of the book.

The pronunciation of the Cantonese dialect is transcribed according to ordinary English requirements, not according to the current method of Wade, which for many reasons does not recommend itself, and is a kind of compromise between English, German, French and other modes of transliteration.

Chinese children begin the study of their own language by reading the *Three Character Classic*, which incorporates nearly all the words in common and daily use, and at the same time contains the gist of Chinese morals and ideas.

The authors of *Chinese Made Easy* have done well to incorporate this famous school book in big plain characters with transliteration in Cantonese, English translation, and brief footnotes which are indispensable to explain to the reader the many historical allusions.

It is a book which the reviewer himself chose as his text-book when he began to study Chinese, and he made a new English translation which appeared in *The Open Court,* together with specimens of the Chinese text and some explanation of the characters. We had at the time contemplated the publication of the *Three Character Book* in pamphlet form, but the difficulty of the Chinese text, lack of time, and the conviction that some resident of China might do the work better, have prevented its execution. We are glad now to see this Chinese school book made accessible to the English people, and only wish that the notes in some instances might have been a little more copious, or at least that references had been given as to where to find further information on the subjects mentioned in the Chinese text.

The rest of the book is devoted to practical information for the Chinese student. It contains collections of words on man's social, political and civil relations, his mental disposition, names of public buildings, places of business, public institutions, the furniture of the house and stable, etc., tools, wearing apparel and food. There are also specimens of a Chinese English Dictionary, samples of Chinese poetry, and lessons in Chinese writing.

Considering the difficulty of publishing a book of this kind, with its innumerable Chinese characters, the price of the book (6 shillings 6 pence) must be considered cheap. It is a striking looking volume, neatly bound in gold and red in large octavo.

PRINCIPIEN DER METAPHYSIK. Von *Branislav Petronievics.* Erster Band, erste Abtheilung, Allgemeine Ontologie und die formalen Kategorien, mit einem Anhang, Elemente der neuen Geometrie. Heidelberg: Winter, 1904.

A new rebellion against the traditional authority of Euclid and his space-conception is published by Dr. Branislav Petronievics, a Russian scholar and thinker who is building up a new system of metaphysics. The present volume is intended to prepare for the philosophy of the author who in order to lay the foundation of his new system of metaphysics deems it necessary first to overcome the current conception of continuity in mathematics, and to replace it by a discontinuous space-conception.

The present volume is devoted in part to geometrical theorems. The great bulk is devoted to metaphysical speculations. The author argues that the main fault of philosophers and geometricians has been to regard the point as lacking extension, and he rejects Aristotle's view that two points can not touch because they would coincide. A point, according to Petronievics is not unextended but merely a minimum of space, and he claims that the old view of a point as a boundary is due to a confusion of thought. Our author distinguishes between the real point and the point as a boundary; two points touch if their boundaries are in contact and the points of contact which are unreal he calls boundary points in distinction from real points possessing a center and occupying a minimum of space.

Space according to Dr. Petronievics is not a magnitude independent of things but it is the juxtaposition of things, the mere order in which the contents of the world are placed. This juxtaposition, however, is not a continuum, for the continuum if it existed would be a negation of space, and so

space in order to exist must be discrete, which means it must consist of indivisible particles, a proposition which he endeavors to prove. The innovation is admirable; it beats Riemann's curved space, and also Bolyai and Lobachevski. Even the believers in the fourth dimension must confess that they are left behind. It is ingenious, original, and bold. We almost wish it were logically tenable.

Though Dr. Petronievics is not a mathematician by profession, he deems it necessary for the establishment of his metaphysics to clear the way by propounding a new geometry based upon the idea of a discrete space-conception which starts with assumptions different from Euclid's, and defines the point in any ultimate, simple and indivisible part of space. The center point is called the real point filled with existence of some kind while the boundary point is the unreal, empty, and non-existent space between two points. Two points touch if they are not separated by any intervening point of space. It is interesting to note the changes which Dr. Petronievics introduces in his new geometry of discrete space, but the world of science is conservative, and we do not expect that this new geometry will replace the old-fashioned Euclidean method.

PSYCHOLOGISCHE STUDIEN. Herausgegeben von *Wilhelm Wundt*. Leipsic: Engelmann, 1905. Price, 3 marks.

In February, 1905, Professor Wundt began editing this series of Psychological Studies, which appears at regular intervals, and of which six numbers form a volume. This series is really a continuation of the Philosophical Studies, the last number of which in February, 1903, marked the close of the eighteenth volume. Psychologists will welcome this revival of Professor Wundt's activity, and the limitation of subject matter to the one branch will greatly increase its value along this line. After the editorial forword the first number opens with a contribution to memory research by Fritz Reuther, and contains several minor communications besides. Other contributions in the early numbers are by Robert Bergemann and Stanislaus Kobylecki.

COURS DE CHIMIE PHYSIQUE. Suivi d'applications à la chimie et à la biologie. Par *Victor Henri*. 1r fascicule. Paris: Hermann, 1906. Pp. 336. Price, 15 francs to subscribers of the whole work.

This elementary course in physical chemistry is offered for the benefit of readers possessing only elementary notions of chemistry and physics. The use of advanced mathematics has been reduced to the selection of a few very simple expressions, and even these are not indispensable to the comprehension of the whole. In each chapter the author points out: (1) the methods of measure by means of which the given phenomenon is to be considered; (2) the experimental results; and (3) the hypothesis and general theories which make it possible to combine these results with those obtained by other methods.

The chapters contained in this volume, which is only the first instalment of a large work, treat the following subjects: general conditions of the equilibrium of solutions and their electrical conductivity, the theory of ions, osmotic pressure and diffusion of solutions, cryoscopy, tonometry and ebullios-

copy, dissolution and absorption, superficial tension and viscosity, the optical properties of solutions, and electrical phenomena in solutions.

LES ORIGINES DE LA STATIQUE. Par *P. Duhem.* 1st vol. Paris: Hermann, 1905. Pp. lv, 360. Price, 10 francs, $1,90.

Professor Duhem of Bordeaux states in the preface of this work, that it lacks something of the system which might seem desirable, and which he intended it to possess. This, he says, is due to the fact that his earlier studies and preliminary reading on the history of statics was entirely overthrown by his later researches into the subject. For instance, he discovered that it is not true, as has been commonly supposed, that the work of Leonardo da Vinci which was so rich in new mechanical ideas, was entirely unknown to the geometricians of the Renaissance.

This volume begins the study of statics in the time of Aristotle and Archimedes, while the second and third chapters are devoted to Leonardo da Vinci and Jerome Cardan of the fifteenth and sixteenth centuries. Chapter 4 is devoted to the impossibility of the idea of perpetual motion and is followed by a discussion of the statics of the Middle Ages and their Alexandrian sources, including writings attributed to Euclid. The Mediæval knowledge of statics as represented by Jordanus de Nemore and Leonardo da Vinci is followed by the reaction against Jordanus. A chapter is devoted to Galileo and one to Simon Stevin, and the volume closes with the history of statics in France up to the time of Descartes.

PSYCHOLOGISCHE STUDIEN. Von *Theodor Lipps.* 2d ed. Leipsic: Dürr, 1905. Pp. 287.

Theodor Lipps, the well-known psychologist, has revised and enlarged his psychological studies which now lie before us in their second edition. He discusses in them the main problems or theories of vision, the problems of the blind spot including corporeal vision, the theories of tones and the rhythm of tones and finally Weber's law. All the essays are written in an attractive style, and it would be desirable that at least parts of the book should be translated into English so as to render the ideas of Lipps more accessible to the student of psychology.

PSYCHOLOGIE DE DEUX MESSIES POSITIVISTES SAINT-SIMON ET AUGUSTE COMTE. Par *Georges Dumas.* Paris: Alcan, 1903. Pp. 314.

The present book on the two positivist Messiahs will be interesting to both philosophers and sociologists. It is a psychological analysis of the ideals, aspirations and lives of Saint-Simon and Auguste Comte, the two prophets of a new social order which would discard the Catholic Church and replace it by a positivist religion; which would substitute for priests, savants and scholars, and for feudal nobility an aristocracy of the mind and intellectual superiority. The dreams of these idealists have not been realized, and yet they exercise a great influence upon our age. Dumas, a psychologist of unusual acumen, here analyzes the sentiments and thoughts of these great leaders, and we learn to appreciate their ideals as well as to understand their failures.

L'ANNÉE BIOLOGIQUE. Comptes rendus annuels des travaux de biologie générale publiés sous la direction de *Yves Delage*. 8me année, 1903. Paris: Soudier, 1905. Pp. xxiv, 475.

The value of this annual to specialists in biological lines cannot be overestimated. Published under the direction of perhaps the first authority in France, it contains carefully prepared notes on each article that has appeared in English, German, French or Italian from the pen of any biologist worthy the name. Immediately after the table of contents there follows a short résumé of each chapter calling attention to the most valuable treatments of that particular subject. Each chapter treats of one special phase of biological interest and consists of a comprehensive bibliography of work written in that department during the year, followed by a short signed review of each article listed. The chapters are on the following subjects: The Cell; Sexual Products and Fecundation; Parthenogenesis, Teratogenesis; Asexual Reproduction; Ontogenesis; Regeneration; Grafting; Sex and Secondary Sexual Characteristics; Metagenetic Polymorphism; Latent Characters; Correlation; Death; Morphology and General Physiology; Heredity; Variation; Origin of Species; Geographical Distribution; Nervous System and Mental Functions; General Theories.

THE JOURNAL OF ABNORMAL PSYCHOLOGY. Edited by *Morton Prince, M. D.* Boston: Old Corner Book Store, 1906. Price, $3.00 or 12s. 6d. per year.

This is a new periodical published bi-monthly in the interests of psychology and medical science, and its board of associate editors consists of the following well-known men, Hugo Münsterberg, J. J. Putnam, A. Hoch, Boris Sidis, C. L. Dana, and Adolf Meyer.

It is designed that this Journal though printed in English shall be international in character. It is primarily intended for the publication of articles embodying clinical and laboratory researches in abnormal mental phenomena. The field of investigation includes hysteria, hallucinations, delusions, amnesias, aboulias, aphasias, fixed ideas, obsessions, automatisms, alterations of personality, multiple personality, dissociation of consciousness, subconscious phenomena, relation of the mind to physiological processes, neurasthenic and psychasthenic states. The Journal will also contain reports of the current literature in the field of psychiatry and allied subjects. The first number (April, 1906,) contains a discussion of the treatment of hysteria by Dr. J. J. Putnam of Harvard Medical School, "The Pathogenesis of Some Impulsions," by Dr. Pierre Janet, of the College of France; "What is Hypnosis?" by Prof. W. v. Bechterew, of St. Petersburg, and "The Psychology of Sudden Religious Conversion," by Dr. Morton Prince, of Tufts College Medical School.

PHILOSOPHIE DER BOTANIK. Von *Dr. J. Reinke*. Leipsic: Barth, 1905. Price, 4.80 marks.

The time is past when philosophy was held in contempt by naturalists, and the tendency is now again in favor of connecting the several branches of science, not only among themselves, but also with a general world-concpetion, thus restoring philosophy to her own. Professor Reinke, of Kiel, has performed this task for his specialty, which is botany, and we note in his work

a strong conservative tendency which may sometimes surprise the iconoclast but will be received with great satisfaction in many quarters. It is a matter of course that Professor Reinke remains a scientist and does not revert to any narrow dogmatism of the churches, but we are glad to find in his speculations an appreciation of the religious problems, especially of the soul and of God, although we can not endorse his particular views. Among other details we deem his arguments against spontaneous generation and in favor of the act of special creation insufficient, and we would not accept his views of the cosmic intelligence, the nature of the soul, and the possible existence of an unknown soul substratum.

Professor Mills has edited "The First Chapter of the Pahlavi Yasna" in the October, 1906, number of the *Muséon* of Louvain University, Belgium, an ancient seat of Catholic learning. This lies doubly in the line of Mr. Mills's official duties, for the work has never been edited by another scholar before with the collation of manuscripts, and it is now prepared from all of them, and chiefly from those acquired by the author for the Oxford University Library. An earlier form of this edition from the same writer appeared as deciphered in the publications of the German Oriental Society, a year or two ago; but here it is printed in the costly Oriental character, and with all the variants given. The typesetter and printer is Mr. J. B. Istas of Louvain, the publisher of the *Muséon*. The expense must have been quite considerable as the article reaches 28 pages. It is very sightly, and will be useful as a text-book on this chapter. It was executed at the repeated invitation of the editor of the review. Professor Mills has now nearly finished the editing and translating of all the Pahlavi texts of the Yasna, his especial task.

These texts have appeared chiefly in the *Zeitschrift der deutsch-morgenländischen Gesellschaft,* Chapters LVII-LXI having been accepted, and will appear in due course.

The intermediate portion appears of course in his Gāthas. It has been an exceedingly laborious task, and one from which all European Zendists since Spiegel seem for the most part to have shrunk. In Pahlavi one perpendicular stroke represents five different letters with no possible means of discrimination save the context. It seems to be more harassing than Assyrian in some respects.

Such letters as *ufyā* and *nepesh* are written with the same signs and the person who wrote them could not later tell which word was meant but for the context, and unless he especially recalled what his former intention had been.

The *Journal of the Royal Asiatic Society* has been printing the English translation of the texts continuously, and the author was much gratified at the remarks of Lord Reay, the President of the Society at the last anniversary meeting, which were published in the July number of the *Journal.*

The works which have appeared in these journals from time to time will be reprinted in book form as soon as possible.

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THE MONIST

AVESTA ESCHATOLOGY COMPARED WITH THE BOOKS OF DANIEL AND REVELATION.*

THE CONCEPTION OF GOD AND THE TERMINOLOGY USED.

AMONG the names applied to the Supreme Being the expression "God of Heaven," also used in the alleged Edicts of Cyrus[1] and his Biblical successors (see 2 Chronicles, Ezra, etc.) appears to be certainly Exilic, even where it may now occur amidst matter formerly believed to be pre-Exilic. It recalls vividly the universal Aryan name Deva,[2] Zeus, Deus, Dieu, etc., for Deity, which in the Aryan vernacular was *Divá,* "the shining sky,"[3] so D(a)eva, to Indian *div.* In Avesta and its sequents the fine term became unhappily inverted in its application owing to theological antipathies and jealousies, and was actually applied to demons through all Zoroastrian literature. But the Iranians themselves, as there can be little doubt, used "D(a)eva," originally in the holy sense, with all the rest of Arya, and the sad misuse is one proof more of the posteriority even of the early Avesta to the earliest Veda. Then the expression "living God" recalls the etymology of Ahura (Inscriptional Aura) the root being *Ahu* = "life"

* For the most part delivered in university lectures.

[1] See Ezra i.

[2] So first suggested by me in *T. R. A. S.*

[3] See Daniel.

Eternal Creator; we have even a sect of Zervanites. Yet this connection, though subjected to a twist, is valid in exactly the same manner, and deeply interesting. Moreover it must be clearly held in mind that a vast mass of analogies must be so estimated while yet cited: see on ahead, where no pretence whatsoever is to be put forward by me to any certain immediate literary connection. My objective, as already stated, is the existence of a post-Exilic intellectual atmosphere in Persian Babylonia, and so also in Persian Jerusalem, an atmosphere which was vital to the new religious aspirations of the Jews—in fact totally transforming them; and that this atmosphere was more Iranian than Babylonian; but much detail of an otherwise very inferior character goes to make firm our convictions as to this. It is often a question as to what may have circulated as mere hearsay.

Resuming,—we have again a firm clincher to the idea of eternity in the Deity as being an Iranian concept; and this is afforded by the name of the last Ameshaspend, Ameretatāt; recall "who only hath immortality"[5] (Timothy vii. 16).

ANGELOLOGY WITH DEMONOLOGY.

a. Distinction in Personages.

Angelic personages become discriminated as to their rank as greater or less, in the Exilic and post-Exilic Scriptures, and this marks still further the interesting change in the religious history of Israel. In the genuine pre-Exilic period the angelology was extremely indefinite, having been even thought by some to be a mere theophany, at best a simple messenger-sending from the Deity with-

[5] A curious expression for the Bible to make use of. It looks indeed as if "immortality" were a special title; otherwise what is the sense of it at all? Surely it is not a New Testament doctrine that no one but God has "immortality."

out the supposition of any very distinct personal characteristics in the supernatural messenger himself. We find also naturally little trace of any very exceptional hyper-exaltations of individual angelic or demoniac spiritual beings aside from, and independent of, their use as conveyors of the Divine wishes upon particular occasions. But in the Exile not only are some of these concepts apparently selected to "surround the Throne," but individual beings appear in a most predominant attitude as "Prince" and "Prince of Princes." (See Daniel viii. 25): An especially prominent angel seems even intended to be represented as the agent in raising the dead, like the Saoshyants[1] of Iran: See Daniel xii. 1, 2: "At that time shall Michael stand up, the great Prince which standeth for thy people." See also the expression "Sons of God" after the Iranian idea in Yasht XIII and elsewhere where the Iranian Archangels "have all one Father Ahura."

Whether the other two in Daniel xii. 5, 6, are to be reckoned as "Princes" is not certain, but the occurrences already mentioned suffice to show an exceptional eminence conceded to an exceedingly small number of these believed-in supernatural persons. Similarly see also Daniel x. 21, where Michael, "Your Prince," almost demands a like interpretation to the expressions "Prince of Persia," (see Daniel x. 13, 20), and even to the expressions "Prince of Grecia." If it is written:

"The Prince of the Kingdom of Persia withstood him, Daniel, one and twenty days,—and, lo,—Michael, one of your Princes, came to help me," then as Michael, the Prince was an Archangel, it would seem only fair for us to suppose that the term "Prince of Persia" may possibly have some inclusive allusion to a supernatural being notwithstanding the positive presence of Persian political person

[1] He was himself not an angel, but the first recorded concept of a final Redeemer restoring all things; see elsewhere and below.

ages in the connection; and so the expression "Prince of Grecia" must be somewhat accounted for in the same manner. Of course the word "Prince" here used has also its further and more natural application; and in fact it is quite possible that the entire use of the term "Prince" here as applied to the Archangels may have been first suggested by the necessary mention of the political Princes whose action forms here the subject under discussion. Again, on the contrary, the idea may have been led off by the very prominent position of the national Archangels of Media reckoned as "Princes," a leading one among them having actually the name of Khshathra which may be rendered "Sovereign" or "Prince"; so that, to be exhaustive, it is desirable to mention that even the "Prince of Grecia" in Daniel x. 13, 20, might point toward a semi-extinct angelology further west; but I fear we should be hardly warranted here.

b. The Seven Spirits of God.[1]

It is in Zechariah, Tobit, and Revelations that a few of these more prominent concepts are spoken of as a company of seven; see where I have already necessarily indicated this by anticipation above, and what I shall say here should be regarded as being of the nature of necessary amplification. In the latter book this expression becomes frequent. Nothing could more accord with the Medo-Persian Zoroastrian usage, which may also have expressed itself with a prominence which spread and maintained the concepts everywhere within the vast Perso-Babylonian territory.

No one will suppose that I attach any especial importance to the number seven in itself considered, for it is of well-nigh universal application in Holy Scripture, possibly having had its real origin in the seven days of a week in

[1] This is one of the collections of evidence to which I promised to revert, entering into more extended detail.

a month of about twenty-eight days; but the application of this number to certain conspicuous believed-in angelic beings is quite another matter when we recall the Medo-Persian Ameshaspends which were so widely known. Here accidental coincidence would seem to be rigorously excluded by the facts which I have already instanced above, for the existence of the expression in close proximity to the name of a Gāthic Demon; see above, where an Avesta city more than once in the same document, places connection all the more fully beyond dispute. In Zechariah iv. 10, "the Seven Spirits which are as the eyes of the Lord and which run to and fro throughout the whole earth," not only recall the Seven Ameshaspends, but their activity, which is everywhere expressed, or implied in the Avesta as in the later Zoroastrianism; see also Satan's answer to God in the Introduction to Job, where he says: "I am come from running to and fro in all the earth"; see it cited also elsewhere; and we have even the coincidence as to the "eyes of the Lord," the sun being the "eye of Ahura" in Avesta, as he is the eye of Varuna in the Veda; for though the sun was not an Ameshaspend, but merely exalted in a quasi-personification, yet our main object here, as said above, is literary coincidence or color which may be absolutely without interior correspondence and yet completely effective to show "connection."* In Rev. viii. 2, we have at once again "the seven spirits which are before the throne." Here the application of the same terms to the seven representatives of the Seven Churches (Rev. i. 20) should hardly be regarded as a serious objection, for these later expressions were evidently taken over from the earlier words, which, as we see, occur in Zechariah and Tobit. It would be moreover *a priori* highly improbable that the "seven spirits of God before His throne" should have been an idea finding its origin in the fact that there were seve

* Compare "the angel who took his part."

Christian Bishops in Asia Minor who attracted the attention of the inspired author; see also below.

Notice moreover the very solemn expression "the seven spirits *of God*" in Rev. iii. 2 and 7, which not remotely recalls the still profounder revelations in the Avesta where an analogous passage attributes the "six" spirits to Ahura as a seventh. This occurrence moreover surpasses its Jewish imitations in one all-important particular; for these spirits were in so far really *God's* (that is to say, Ahura's) that they were literally the fundamental concepts not only of all religion, but of all possible moral existence, and so metaphorically indeed the very "Sons of God"; see below for amplification to this point, being also in a sense absolutely identical with Him, as the human attributes are identical with the human personal subjectivity. As regards Rev. iv. 5 (cp. also Zech. iv. 2, 10) I am not aware that the Zoroastrians had exactly seven lamps, or seven candlesticks, but the concept of the seven spirits pervaded the ideas of the writers, while fire (see above) was supreme as a sacrificial object; see also Rev. v. 7. In 8, the seven angels are again seen to stand before the throne recalling Job, where, however, the number is not mentioned (see Rev. viii. 6; xv. 1; xv. 6; xvi. 17; xvii. 11; xx. 19). The same deduction is everywhere in point, namely that while the concepts with their number "seven" are so very Jewish and Christian, they only appeared suddenly upon this Hebrew foreign soil as applied to particular personal spirits, whereas *they were immemorially native to Medo-Persian Zoroastrianism* which for centuries occupied the same territory which was both before and later by constraint invaded by the captives.[2] A further explanation of this crucial number seven should here intervene, and it will afford an all-important illustration as to the asserted facts upon

[2] The places where the Israelitish captives were deposited and settled were "Assyria and the Cities of the Medes."

which our entire procedure depends. For, like almost every other particular of the kind, it is not expected to go upon "all fours." Even the number itself wobbles, the seven being a post-Gāthic term, as is indeed the word *amesha*, (better *amersha*), meaning "immortal," as applied to the Seven; and it, the number seven, first of all includes Ahura. The Ameshaspentas without Him are merely six, whereas in one of the most important of all the passages, the Seven are all said to have "One Father," Ahura. But such irrationalities are universal in ancient religious literatures. The number seven struck its impression deep upon the Iranian mind, having its obvious origin in the number of the Ameshas (Immortals) with Ahura included, and once having gained a footing it twisted their terminology. The word seems later to have meant the Holy Group entirely aside from the actual accuracy of the figure.

That the names or the personified ideas themselves were purposely selected by the original authors to fit in with the already established sanctity of the number is less probable than *vice versa*, from the facts already just noticed; there is no idea of "seven" at all in the original documents, the Gāthas. We might indeed surmise that an originally prevailing sanctity of such a number among the Irano-Aryan tribes, having returned more vividly to the consciousness of the later Zoroastrians, and also possibly having found its way in from without, they may then in the later but still genuine Avesta have adopted the term, fitting it into the fact that the "Six" with their Original, were indeed "Seven"; recall the Seven Karshvas,—but the probabilities lie totally on the other side of it. The sanctity of the Six with Ahura, the Seventh, or as the First of a Seven, was of the most exalted and effective character possible, affording among the Iranians at least and their descendants whether actual or merely intellectual, an all-sufficient reason for the excessive vene-

ration for the number, as usual on rational grounds; for what reasons for the sanctification of any such figure could at all approach the fact that it expressed the number of the accepted, or recognized attributes of the Supreme Deity? And even if the glimmer of the idea of Seven did indeed revive from an earlier Iranian-Indian origin, or even, if it did later creep in from abroad; yet even then it was obviously, notoriously, and almost exclusively appropriated by the unconscious facts of the Iranian theological situation. No one who reads the Gāthas with any receptive capacity at all could imagine that those Six were especially worked out to coincide with the superficial and indeed artificial sanctity of any number elsewhere superstitiously adored. If that had been the case Seven would undoubtedly have been mentioned in them, the Gāthas. If the number "seven" had any very especial sanctity in the pre-Gāthic period that sanctity may have been purposely nursed from religious motives, and it may have exerted a quiet influence even in the Gāthic period, but in no degree such a powerful and dominant influence as it exerted in all subsequent Iranian history.

Nothing is more pressingly important to all our constructive conjectures than to recall this principle at every step. Hardly an item, except these first cited, presents a mechanically exact correspondence. Another excellent example should be noted merely for the sake of emphasizing our illustration. Aramaiti is rhetorically termed "God's daughter" in several places, and "His wife" in another. So Mithra is almost His fellow-God at times, and yet His creature at others. In more than one place Ahura actually sacrifices to Mithra and others of His sub-deities, just as a courteous sovereign would never formally address a nobleman without using his title. Ancient Gods also universally borrow each other's attributes, and in pursuing scientific discriminations as to these points the expert must

note which god is *predominant* in the possession of certain characteristics. Periods of transition also occur during which each leading god usurps or inherits the accredited deeds or powers of the others; and there are often distinctly marked epochs, where One God, as represented by his followers, seems almost to wrangle for an attribute with a waning predecessor.[3]

Periods of the prevailing ascendency of one God also overlap upon those of another.

c. The Naming of the Archangels.

While such a culmination was most possible as an entirely independent Jewish growth in parallel lines with that in the Zoroastrian scriptures, yet in presence of the immemorial Avestic and Vedic use, one at once recognizes the influence of the new Persian scene. The Jews, being Persian subjects, were perforce upon the most intimate political terms with many of the Persian officials, and they could not meet and converse religiously with any Persian - Babylonian acquaintance from Media, without hearing at every sentence the name of an Archangel, for these fine believed-in supernatural personages later gave the very names to the months and days,[4] and this usage may well have begun at a date which would here come in; and they were often used in the course of the day in private devotion. Their names also occurred often in private proper names, the Greeks themselves becoming aware of them (see below). What wonder then that they began, though at first quite unconsciously, not only to construct intellectually their own personified religious con-

[3] See Indra as he supplants his predecessors in R. V.

[4] Not only were many of the months named after them and their underlings; but the days of the month as well. Everything rang with the terms, so to speak, not excepting sometimes the proper names of the most eminent persons; for instance in such a word as Artaxerxes we have the names of two of the immortals, — Arta, which equalled Asha, and Khshathra; the prayer hours of the day, later five in number involved the constant recalling of the names.

cepts, and upon the same model as those of the Iranians (see above), but to *name* them as well, after the same fashion which was ever upon the lips of their political and social allies.

"The man Gabriel being caused to fly swiftly," etc. (Daniel) may be taken as a leading illustration. The few Zoroastrian "Immortals," unlike even their first imitations in Zech. iv, dispense with the supernatural limbs of locomotion, and especially with contra-anatomical growths for æriał excursion, but Gabriel, "Man of God," at once recalls the fact that Vohumanah represents precisely "the man of God" even in the Gāthas, not etymologically of course; and in the Vendidad he represents him in a manner so emphatic that there Vohu Manah, as representing the well-conducted citizen, may even be "defiled" through some impure physical contamination (see below); and we should not fail to add that the Zoroastrian angels have also a "flight" in descending to the believer, but as ever in the more refined form of rhetorical imagery rather than in that of muscular delineation.[5] So when the leading priests in Persian Babylon began to think out for themselves Archangelic personages they would naturally give some such names as we have recorded; and so Michael "who like God?" appeared. We have noticed Gabriel as recalling Vohuman; but he also recalls the exploits of many an Iranian Angel, Sraosha in particular, though he, Sraosha, was certainly not at first recognized as an Amesha, yet he succeeded in pushing some of these leading forms aside in his progress as a defender. So in Revelations there was "war" in heaven and Michael the Prince contended with the Devil in Jude, just as Sraosha pre-eminently vanquished Angra-Mainyus. But we must not go further before we recall and further explain the incisive circumstance that the Zoroastrian names differ radically and transcend

[5] Yt. xiii. 84, 84.

immensely the Biblical ones in an all-important particular, already touched upon above, for whereas the Jewish expressions depict with color fine poetical images, the Zoroastrian terms express the first internal elements of the mental universe; see above and in the following remarks. *Vohu manah,* while used for the "orthodox saint," means distinctly *bona mens;* they may be the same words indeed in another form; *manah* is of course *mens.* Asha is "the law," the "idea of consecutive order," the "truth pre-eminent" in every germ; Khshathra, the sovereign power, comes in also as if with conscious logic; compare both the Gāthic and the Lord's prayer;[6] in the first we have "Thine is the kingdom," as in the last, with no very probable immediate literary connection; it is the idea of sacred authoritative force; Aramaiti is the psychic energy of purpose, "the toiling Mind,"[7] while Haurvatāt is the completeness of Deity, conferring full weal and chiefly health upon His "good" creatures, and Ameretatāt is literally "immortality," the two forms of exactly the same word. As approaching this we have such expressions as "The Amen"; see the Asha = Truth. Descending to the minor concepts; see above my allusions to "Hvarenah," etc. In addition to this we may recall the fact that Raphael, one of the Jewish Archangels, is actually declared to be "One of the Seven Spirits" in the Tale of Tobit which almost centers about the chief Zoroastrian city Ragha.

d. Iranian Names Suggested Where Neither They Nor Any Semitic Equivalents Actually Appear.

While Michael and Gabriel are in evidence on the Semitic side and "God of Heaven" has been cited as possibly an Aryan element amidst the throng of Semitic terms, we may

[6] See Yasna LIII, 7: "For 'thine is the kingdom' through which Thou wilt give.....to the right-living poor."

[7] I refer *ar* to *ar* = "to plough" cp. *aratrum.*

proceed to notice such an expression as that in Daniel ii. 11, "whose dwellings are not in the flesh." This would be an advance upon earlier concepts where the bodily figure of Yahveh Elohim is plainly referred to; and these finer ideas arose under the stimulus of the Exile, anthropomorphic modes of thought having been much shaken off, not necessarily at all in imitation of Persian modes of expression. For even in the Gāthas, a vision of Ahura is sought for, though a vision of Ahura as manifested in a bodily form would indeed introduce an element into the Gāthas directly in conflict with one of its leading distinctions, that between the "bodily" and the "mental" worlds. In the later Yasna, however, we have His "Body," though everything points to a merely rhetorical (xx. 2) usage here as in the post-Avestic Zoroastrianism, though I do not feel that the post-Gāthic Zoroastrians would have objected much to God's body, if they could only have managed the idea of it; and it would have been easy enough to add the adjective "spiritual" before such a noun as "body." A "God of Gods" (Daniel ii. 47) recalls again the inscriptional turn of words "King of Kings" and also its actual sentence "greatest of all the Gods," the Creator both of the Immortals and of Mithra; see below. Strangely enough Adar, the angel of fire, is most significantly indicated in Daniel iii. 25: "The fourth figure walking in the super-heated furnace is like unto a son of the gods." But "Son of God," i. e., of Ahura, was precisely a most noted and ever iterated title of the fire, as somewhat dimly personified in the later but still genuine Avesta. The spirit of the Holy Gods, in Daniel iv. 9, recalls again the Spenishta Mainyu, the most Holy Spirit, so the most; I prefer, the "most August Spirit." In the Avesta this "most August Spirit" is a curious growth out of the concept Ahura, much like that of the Holy Spirit in the Exilic Scriptures. It seems to be a sort of attribute at first; and then perhaps it edged its way into

personification, as so often with similar ideas. The "watcher and the Holy One" of Daniel iv. 13 suggest Sraosha who "never slept since the two Spirits made the worlds; three times of the night and day" he attacks the enemy and defends the souls of the faithful. The "coming down from Heaven" (same verse) suggests the Six in Yasht XIII, where we have, "shining are their paths as they come down to the faithful." In Daniel iv. 17, the demands "by the words of the Holy Ones" again suggest the Seven; they all, constructively, watch and speak; and see "the Spirit of the Holy Gods" again with "Spenishta Mainyu" as its counterpart.

The reader has long since, let us hope, fully seen the pointing of our procedure. While hardly a single instance here cited shows any absolutely certain immediate and definite external literary connection with Avesta, yet *the duty continually grows upon us to gather up not only the more prominent evidences of interior connection arising from parallel development, but the entire mass of them; for they undoubtedly accumulate force if only slowly,* and they build up a structure of comparative theological doctrine which demands a universal recognition; and as it gains a hearing, it gradually but surely substantiates the Zoroastrian-Israelitish historical connection as well. To resume—see "the watchers" like Sraosha again at Daniel iv. 23. The talk of "the kingdoms" is again original, and yet it again suggests Avesta Khshathra; see by anticipation the "care of the poor"[8] (iv. 27) cited from the Gāthas above and below. This idea occurs more than once in the Gāthas and also in the Ahuna Vairya. The "most high ruling" suggests "Ahura as king." See the "Spirit of the Holy Gods" still once more again in Daniel iv. 34. In v. 20 "the Glory taken away" from the monarch, sug-

[8] The "care of the poor" was a marked Gāthic idea; and in spite of a despotic government, if not in consequence of it, the "poor" seem always to have had some special privileges in Persia as against the aristocracy.

gests the Hvarenah of the Kavis as elsewhere. This latter, however, eluded seizure; see the Yashts. The word *Satraps*[9] of vi. 7 is pure Persian of course; cp. *khshathrapavan*, though the Archangel Khshathra was not here at all directly thought of.

The "Living God" (vi. 26) again suggests the same thoughts which originally determined the word Ahura; see above. See also "The Ancient of Days" again, which. aside from that most significant expression "in Boundless Time"[10] recalls Ahura as he who is "the same at every now" ; recall "the same, yesterday, to-day and for ever."[11] All the expressions in vii. 14 recall the Spirit of the new Persian - Babylonian religious thought, "indestructible kingdom" being also familiar to both. Most curiously both the ram and the he-goat of 8, appear in the Yasht to Victory, a brilliant Avesta piece, and likewise in the same order, with the ram first. Notice Gabriel's, "the man's voice," of viii. 16, the Prince of Princes of viii. 25 which ought always to suggest Vohu Manah, while Asha, who secured the first place among the Archangels, was later, as already stated, rudely pushed off the stage of action by Sraosha who is also elsewhere metaphorically aggressive. "Righteousness belongeth unto Thee," originally arose from the same impulsive convictions which attributed Asha, the Holy Legal Truth, to Ahura. So Vohumanah was really "mercy"; see ix. 9. In ix. 10, "not obeying" arose from the same psychic forces which evoked the condemnation of *ascroasha*, non-obedience in Y, LX, 9, 11. There was also a "curse" almost personified in Avesta. "The Lord watching over evil" (ix. 14) recalls Isaiah xiv. 7, in contradiction to the implication that God did not create sin, while, on the contrary, Ahura was thus limited.

[9] Darius's father was one of his son's Satraps.

[10] Recall the Greek Chronos.

[11] See above where "Boundless Time" itself became a deity and a creator.

See again "all the Righteousness of God," (ix. 16), recalling the Asha of Ahura.

"Hearken, hear, and incline Thine ear," (ix. 18), are emphatic and iterated Gāthic ideas and words, and the first conception of Sraosha is "God's ear." So are "hear and forgive";* so also "bringing in everlasting righteousness" (Daniel ix. 24) is very Avestic as the first essential idea of *Frashakart*[12] without which the supernatural beatifications comprised within that engaging hope would be of no effect; cp. "no envy Demon-made." Daniel x: the Yashts are full of "war"[13] as are indeed the Gāthas, these last have however no pictorial personifications to correspond. I cannot say what Aryan angel is suggested by "the man clothed in linen," though as already said, Vohumanah, representing "man," recalls Gabriel. In x. 11, "He comes" like Vohuman, so repeatedly in Y. XLIII; see x. 18, the same motives inducing both descriptive manifestations. In xi. 2 the "truth" is again Asha.

In xi. 16 "doing according to His will" emphatically recalls the very characteristic and repeated expression of Avesta, "using power according to His will"; see also the *vasiy*[14] of the Inscription; see also Khshathra again as the "Divine Rule" (xi. 17). I do not know what to suggest with regard to the other two angels of Daniel xii. 5.

e. Unnamed Semitic Angels With Aryan Analogies.

The Angel in Rev. i who leads and conducts the narrator was suggested by the same idea as determined Sraosha to a similar office in the Book of the Artā-i-Virāf of the later Zoroastrianism; see also Y. XXVIII, 5, of the Gāthas; so "in the spirit" (Rev. i. 10) is very Zoroastrian, though not exactly in the pointed sense. Artā-i-Virāf,

* Y. XXXII, 11.

[12] Millennial Perfection.

[13] Cp. Yt. XIX, 1, where Ahura himself takes part.

[14] Meaning "at will," "with complete sway."

however, was "in the spirit" much after the fashion of St. John, though in his case (Artā-i-Virāf's) this took place with the assistance of a drug. There is also a prominent book called the "Spirit of Wisdom."

"Writing in a book" reminds us that Zoroastrianism with Judaism was one of the very few prominent book-religions. The Son of Man again, as in Daniel, recalls Vohuman who represented "man."[15] In Rev. i. 16, the "sword from the mouth" suggests the weapon of Sraosha which was emphatically "the Word of God," the Honover of Avesta.[16] In Rev. i. 17, "the first and the last" sounds like a keynote of the Avesta, though there the Devil shared this primordial eternal existence. There were "two first spirits": see also the word *ap(a)ourvyam*, "having no first"; that is to say, "having none before it," which qualifies the superexcellence of the chants; see below on the "new song." Yet some expositors might well apply the term grammatically to Mazda Ahura. In Rev. i. 18 the "Living One" again recalls Ahu-ra; see above, here, however, apparently referring to the risen Jesus, whereas in Daniel the Deity is held in view.

The description of the seven stars as the "seven angels of the seven churches (Rev. i. 20) by no means annihilates, but rather on the contrary assists our contention as to the analogies. The idea and the words as already stated, were taken over from the seven angels before "the throne." The reversed direction would be quaint indeed.[17] The human Angels were addressed in the terms of common parlance. "I know thy works" (ii. 2) expresses the essence of Zoroastrian judgment; see the first strophe of the Gāthas. The "tree of life" (ii. 7) reminds one of Ameretatāt, which

[15] See above.

[16] See Yasna XIX.

[17] As if the idea of "the seven spirits of God" was derived from the idea of the seven Bishops.

represented both never dying life, and later the vegetable kingdom which supported it, whereas in Genesis it recalls the vine with its supposed supernatural excitations, for which compare the Hōm Yasht which celebrates the same sacred influence, "he that hath an ear to hear" (ii. 11) is again so significant in the Avesta that it has an especial angel, Sraosha, to represent it; see also the Yasna, where "Hear ye these things with the ears," twice introduces the most solemn and far-reaching of all the doctrines. He who was dead and is alive again" (Rev. ii. 8), recalls the realization of the ideas which lurk in Ameretatāt and are expressed fully elsewhere; see below. The intervention of the Satanic opposition (ii. 9) is everywhere marked in Zoroastrianism, where it was first recognized; but the details of the Semitic allusions are here the most pointed.

Periods of trial (ii. 10) are familiar throughout Zoroastrianism, and the keynote of all is final victory, certainly at least for the elect. "The crown of life" (ii. 10) is far more poetical than the mere immortality of the Avesta, though victory abounds in the latter. Satan's throne (ii. 13) is not positively an Avestic expression; but the counterparts to Vendidad XIX, 32 (105), and Yasht XXII, have been lost; there "evil" thrones are due to offset the holier ones. We are also reminded of the top of Arezura, V. XIX. 45 (w) where the choice of spirits of the infernal world converge, doubtless under the presidency of their chief. In Rev. ii. 13, "Satan's dwelling" recalls strikingly the abode of the Druj, Y. XLVI, XLIX, the Devil's eldest daughter, almost himself. Idol-worship (ii. 14) is one of the chief things condemned at the judgment of the Zoroastrians. In ii. 17, the "Spirit" recalls again the "most Holy," or "August Spirit" of the Gāthas exactly in analogy with the Holy Spirit of the Old and New Testaments, with no immediate literary connection. The hidden manna,

(Rev. ii. 17) also somewhat dimly recalls the immortal food of the Zoroastrian "Heaven," the Holy Oil of the beatified. "The Son of God," who has "eyes like a flame of fire" and feet like "burnished" and so "fiery brass" again recalls our Adar also represented in Avesta under the rhetorical image of personification. And we notice once again that the fire was "God's son," the expression often occurring. Rev. ii. 19, again recalls the first verse of the Gātha, "all works done with Asha." Both Zoroastrianism and Rev. ii. 20 are severe upon the harlot. In ii. 23, one "which searcheth the heart" recalls "on all with the truth (i. e., searchingly) Thou art gazing." The "Son of God" as "benevolent" sympathy (Rev. ii. 19) recalls the noted expression in the Gāthas, "with Asha in sympathy," as also that which reports "the love of Ahura Mazda." "The depths of Satan" (ii. 24) recall the "things hidden" of Yasna XXXI. "Behold I come quickly" (Rev. ii. 16) recalls the Gāthic expression "swift be it" (the issue) as addressed to Ahura. Here we have as so often no immediate literary connection, but the two ideas were determined by the same psychological moment.

Vohumanah distinctly recalls the "beginning of the creation of God" (iii. 14) as he was supposed to be the "first[18] made of every creature," not, however, an Avestic expression. See the "Amen" again for Asha in a most solemn and heart-touching sense from interior parallel development.

"He that overcometh" (Rev. iii. 21) is again very Zoroastrian of "Victory." In iii. 21, the sitting upon the throne again recalls the scene in the Vendidād. The four and twenty elders on thrones (iv. 4) or round about the throne are exactly the Immortals in Vendidād though the number there in V. is but a fourth of them; see below.

[18] Vohumanah worked his way to the fore on account of his meaning which was "Benevolence."

Vohu Manah seems to sit down, if not *with* Ahura on His throne, V. XIX, 132 (105), yet upon a throne in His near vicinity; recall where the Son of Man sits upon the throne of His Glory (Vohu Manah also representing the religious man in Avesta, as to which see below); the Deity also presumably presided. So the seven lamps of fire, (4, 5) have been already mentioned as a manifestation of the angel Atar (Adar). In iv. 6 the living creature full of eyes seems distinctly motived by Mithra with his 1000 eyes (see also Ezekiel). The especial homage to God as "the Creator" (iv. 11) is perhaps more constantly present in Zoroastrianism than in any other lore (see also the Inscriptions). "Glory" in iv. 11 again recalls Hvarenah and its angel; see Power equalling Khshathra again. "Because of thy will" (iv. 11) is again very Avestic and inscriptional both as applied to Ahura and His saints. "Power" is again Khshathra (v. 12). "Riches" is Ashi Vanguhi; "wisdom" may be Aramaiti; "glory" again is Hvarenah. The "white horse" of vi. 2 is a striking symbol in the Yasht to victory; see also "conquering and to conquer." The "bow" was pre-eminently the Persian weapon, baffling the Romans in many an encounter,[19] the "horse that was red" (vi. 4) recalls again the Avesta with the varying color; and so the "black horse" (vi. 5), all presumably in the sky, or on some conspicuous elevation. The angel of the Abyss (ix. 11) is Angra Mainyu, or his agent. ("face downward are the D(a)evas"). Recall Ezek. viii. 16 and the "twenty-five men with their backs to the temple as they worshiped the sun," pure Zoroastrianism, or the like. The "beast coming up out of the abyss," (Rev. xi. 7) recalls again the demon Angra Mainyu, who among his myrmidons certainly fled to Hell, which was situated in a downward direction; see in Vendidād; see also Artā-i-

[19] The supply of arrows was furnished in camel loads and almost inexhaustible.

Virāf. "After three days and a half" (xi. 9) vividly recalls the idea of the period during which the soul lingers around the body in Yasht, XXII; see also the approximately similar borrowed Muhammedan belief. (It would seem to be profane to mention the "three days" of the Gospels.)

Passing over much interesting and apposite detail we have in Rev. xii. 7 the "war in Heaven," elsewhere also often mentioned, which precisely in this connection recalls the war of Apaosha in the Yasht, whose enemy was then as now well thought to be drought, the great enemy of man in torrid climates; this point in Avesta is again rational.

"The Deceiver of the world" (xii. 9) is beyond all doubt a Zoroastrian idea of the Devil, whose central product was the Lie-Druj (female demon). "The kingdom of our God" (xii. 10) recalls again of course "Thine is the kingdom" in the Gātha; the expression of Royal authority *par eminence,* is Khshathra. This "Reign of God" is again pre-eminently Khshathra who was Ahura's attribute: "the temple of God which is in heaven" (xi. 19) recalls the same idea of celestial supernatural architecture in Avesta. The dragon of seven heads is, of course, the Azhi Dahāka of Avesta, the Ahi of the Veda, which both had six heads, the six being changed to seven in Revelation on account of the dominant influence of that number with possible reference to the Seven Hills of Rome.

Like the Vedic Ahi, he kept off the rain.[20] "The Devil having great wrath" (xii. 12) vividly reminds us of Aeshma, the demon of the *Raid Fury,* again quite a rational concept. There was also "an eagle" in the Avesta in the Yasht (xii. 14). The "worship of the dragon" (xiii. 4) was literally again suggested by that of the great rational

[20] Notice in passing what I must refer to later on, which is the constant rationalism of the Avesta-Vedic concepts as against the Babylonian-Israelitish. One of the most marvelous of literary circumstances is that all the gods, or most of them, have meaning in Avesta, as in Veda and for the most part abstract meaning.

Azhi Dahāka (see also the Veda) who showed his claim to be the greatest of the devils, coiling his folds about the rain clouds, the dripping cows of heaven. The "angel with the eternal Gospel" (xiv. 7) is the Sraosha with the Manthra; so only in strongest analogy, of course.

In xiv. 18, the angel who had power over fire is again distinctly an Atar whether directly and immediately so suggested, or by parallel development. In xv. 3, the "King of the Ages" again recalls *Zrvāna akarana*. "Boundless Time," which became a Deity; see the sect of the Zervanites already more than once noticed.

At xvi. 3, the angel that poured into the sea recalls the Gospatshah of the Mainyu-i-Khard. In xvi. 13, the "unclean spirits like frogs" strikingly recall the fact that the frog was perhaps the most prominent among unclean beasts in Avesta. And let me also say here in passing that the Avesta alone affords rational explanation of the distinction between clean and unclean, from the fact that the Devil made the latter. Many animals (like indeed the very ones here in question, the frogs) were quite harmless except as regards some nocturnal voicings, and even used as choice food in some localities; but they were ostracized from the "pure creation," and solely because *their creator was the Iranian Satan.*

Notice again the "Lord of Lords and King of Kings" (xvii. 14). The "angel having great authority" (xviii. 1) is again a fine Khshathra, Ahura's Sovereign Power. The angel "with the great mill-stone" recalls the mythical Zoroaster who assaults the enemy with an enormous piece of rock, "large as a cottage," so some render. The Amen (xix. 4) is again always a good Asha, Ahura's "Law and Truth." In xix. 6, we have Ahura reigning, in 7, again the glory, Hvarenah. The "marriage of the Lamb" (xix. 9) recalls the figurative concept of the "wives of God," and again, the sacred feast of the Zoroastrian heaven. In xix.

11, we have a rare bit of Zoroastrian drawing. The "white horse" once more immediately suggests again the "white steed" of the Yasht to victory; see also the four-span white horses of Sraosha. The "faithful and true" one recalls the old Persian ideal (see Herodotus); it had its root in Asha. The "word of God" is again the Honover which was "before the world," and "the sword by which His angel slays" the Devil, so Zoroaster repels him in his "temptation" with it. The name upon his thigh is again our Aryan "King of Kings" of the Inscriptions, here fitting in especially because not applied to the Supreme Deity, as indeed also once in Daniel where as in the Persian Inscription it refers to a human potentate. In xix 17, we have the Hvare Khsh(a)-eta as the shining sun once more; recall again Ezekiel viii. 16, with "the five and twenty who, turning their backs to the temple, worshiped the sun." The Ezekiel passages cannot be called pre-Exilic, nor, if they were genuinely of his date, can they be said to rank the Daric Inscriptions, which were supposed to be somewhat later; for, while it is absolutely certain that the allusion to the sun-worshipers was motived by foreign influence upon the Jews, the expressions upon the Inscriptions as positively prove that they had long pre-existing native predecessors; or that they were even stereotyped formulas; see whole sentences mathematically repeated in the Inscriptions on Behistān and on those elsewhere which were later than Darius. This proves almost conclusively that Darius's terms were formulas long since used also by his predecessors as well, so that an inscriptional expression necessarily implies an earlier original in Iran; but the same argument does not hold with regard to the terms in Ezekiel to prove a prior Israelitish origin, because these latter were *distinctly of foreign origin.* We can not say in regard to those of Israel, as we can say of those of Behistān, that these ideas in Ezekiel must have had predecessors in Israel. For it

seems to be distinctly acknowledged by all fair-minded and capable persons that the general cast of ideas as regards the eschatology and its kindred points existing in the time of the Exile and subsequently to it, was strikingly different from the tone of thought upon these subjects in the earlier Biblical literature. "Satan being bound a thousand years" (xx. 3, 5) rests broadly upon Zoroastrian Chiliasm; see Plutarch's account of it; see also the later Bundahesh which is a pure development from the earliest documents; see also below. The expression "a thousand years" occurs more than three times in the Avesta itself, and all the other features are likewise marked in it. Recall also the expressions cited by Plutarch from Theopompus(?).

The "Throne of God and of the Lamb" (xxii. 1) again recalls Ahura's throne with Vohu Manah. The angel sent to show the revelation (xxii. 8) again recalls Sraosha both in Yasna XXVIII and in the Artā-i-Virāf. "The pure river of the water of life" (xxii. 1) makes us think at once of *Ardvi sūra Anāhita*, "the river lofty, heroic, (i. e., effective), and the spotless which purified all seed, and all generative production;" see also the other holy waters so constantly in evidence. Without laying the smallest stress upon any possible or probable immediate literary connection showing the influence of the Avesta in the above particulars cited from Ezekiel, Zechariah, Daniel and the Apocalypse, it is yet difficult to resist the conviction from the whole of them, that they conjointly indicate the intellectual and esthetic world in which the Exilic and post-Exilic Jews and Jewish Christians lived; and that this was dominated by the scenes and associations of the Perso-Babylonian Exile. But the Perso-Babylonian intellectual world was interpenetrated with the same type of conception and imagery which previously, or simultaneously, prevailed in the Median Zoroastrianism and in the religion of the Daric

Achæmenian inscriptions; and the "captive exiles" are twice pointedly said to have been re-settled in the "Cities of the Medes" as well as in Assyria. If this were the case the priests of the people were in almost daily contact with highly ritualistic Zoroastrians or pre-Zoroastrians, if I might so express myself, Zoroastrianism being of course only a culmination. Even had they never met the Median priests, which is well-nigh impossible, the main tenets of Zoroastrianism were daily forced upon their notice through the laity, who had later five periods in the day for reciting prayers, and may have had them earlier. Here then was "contact" and in pre-eminence.

THE CONCEPT OF ETERNITY IN GENERAL.

This is now a convenient place for us to pause and recall the main Jewish Exilic and the Zoroastrian concepts of eternity in general, more closely considering them as applied to the supposed existence of the supernatural beings above discussed. As we have already conceded, the pre-Exilic concepts of futurity were extremely indistinct, but under the general inspiration of the Exile the other life began to take on its now familiar marked characteristics; see above. This has been our result so far.

Prominent among the expressions used would be "for ever and ever"; see Daniel ii. 4; ii. 44; the New Testament needs not to be cited. So that we have before us an entirely fresh *Dogmatik* as to this particular in their Exilic and post-Exilic documents.

But in the Avesta we have an "endless futurity" from the remotest inception of the lore and we have also in it, as we may well claim, the earliest expression of the idea in a refined literature and outside of barbaric assertions of it. This occurs in the oldest Avesta in such terms as *vispāi yāvōi*, "to all futurity," *yavaetaitē*, "in the contin-

uance, i. e., forever," as well as in the entire build and organic unity of the works which substantiate our claim for the Avesta that it is the first document of this concept. "Immortality" of another kind must have been thought of times without number wherever the human race appeared; recall the common visions of the dead in cerebral hyperaction, as in dreams. In our natural anxiety to do justice to the initiative of the Avesta upon this particular, we must by no means make light of this.

Unquestionably indeed the thought of immortality in the Veda first acquired consistency from that of "long life" only, the "hundred autumns" of the Rik. The fact that the word for it is literally "immortality," *Ameretatāt*, the identical term, differing only in the suffix (see above), should by no means however decide the matter for us, as a beginner might so naturally suppose; for mere "long life" in this world, was certainly expressed by such a word as "non-death," just as by a curious anomaly "eternity" was, on the contrary, at times expressed by a word literally merely "long-life" as in the Veda: and there is some doubt that the term *dirghayu*—or read *dirghayo*—does not mean "Thou eternal" after all in the Gātha; see Y. XXVIII. Be this all in the fact of it as it may, the idea is constructively applied even in the Gāthas to Ahura as well as to His saints, and must therefore in such connections mean "long eternal life"[1] while in the next oldest book, the Haptanghaiti, the term *Ameśha* (better *Amersha*, i. e., "immortal"; see above), is directly applied to the Archangels, in which case this word *Ameretatāt* must certainly mean at times something very different from "old age." As to human immortality, see everywhere: but as to the more pointed particulars of the subject, see below.

[TO BE CONCLUDED.]

[1] Certainly in Yasht. XIII. 82. where Ameretatāt has Ahura as her father.

AGRICULTURE THE BASIS OF EDUCATION.

THAT agriculture furnishes the material basis for civilization has long been recognized, but we continue to forget that it is no less truly the basis of intellectual and social development. By no system or method of formal education can children confined to city houses, door-steps, paved streets and schools, be brought to their full mental stature; the chances are even smaller than that their bodies will develop fully under these unnatural conditions. There is no substitute for direct contacts with nature and with the parent generation on the intellectual side, any more than on the physical.

Plants and animals grow up, each according to its own kind, endowed by heredity with the tendencies and instincts of its species. Only our own offspring and the animals which we have subdued and domesticated are objects of educational efforts. With the animals we use better judgment than with the children, for we do not expect that education can supply the deficiencies of adverse conditions during the earlier stages of existence. We do not hope by later training to make a prize-winner of a stall-raised, stumbling, half-blind colt. We have learned some ways in which it is safe to assist or to supplement nature, but no safe ways to antagonize or to supplant nature. Education has no creative power in itself, as a machine of institutions and methods, but has true

value only when it adds something to the results of natural growth.

Interest is intellectual appetite. It is the index of the mind's readiness for the assimilation of knowledge. Formal instruction does not arouse interest in nature and in human activities, but can speedily deaden and destroy it, especially if the brain be fermenting already with other undigested materials. Minds are weakened by this scholastic dyspepsia, just as bodies would be if all athletes were required to weigh 200 pounds. Subsequent exercise in the world of concrete realities may reduce these mental dropsies, but usually a permanent handicap of ineptitude remains. It is as though the horse-breeders were to follow the methods of the hog-raisers, or as though the system of producing fat-livered geese were applied to game-cocks or to carrier-pigeons. Education means greater power of action, not mere plethora of erudition. The monastic and scholastic traditions do not contain the true or final ideals. Education is a biological subject, a part of life, and must continue to change as life changes, unless it is to hamper or destroy. Endowed systems of education may prove as dangerous to human progress as endowed institutions of religion, if they train the young to face the past instead of the future.

More fundamental than all questions of subject-matter and methods of formal education are the two primal contacts of the child, with nature and with the parents. To weaken these contacts is to impair the conditions of normal development, the basis on which all more specialized forms of training must rest. Association with contemporaries, and technical instruction in literature, sciences and arts have legitimate positions in the educational superstructure, but they can not replace defective foundations.

The actual labor of farming may not have an educational superiority over many other vocations, except for

the greater variety and the more numerous contacts with nature. The farmer who limits his interest to cows or cabbages, to make a little more money, has missed his calling—he should move to town and become a plumber. Work of any kind may be carried to excess, weariness and disgust. Among the Hindus the son regularly takes up his father's occupation, but we are approaching the other extreme. Few people in our cities are sufficiently contented with their work to wish their sons to follow them, which is another cause of weaker contacts between the generations. Many other productive arts could be combined very well with agriculture if the importance of this were adequately realized, but humanity still rates itself cheaper than machinery. People huddle themselves in squalor, to work night and day, lest the precious machines be idle or yield a smaller percentage on the investment. Slum competition restricts the industrial activity of the farm-dwelling part of the community, but other tendencies are now appearing which may bring important advantages to the farm and lessen the unfortunate attractions of the city.

It is not strange that there should be many efforts to avoid by educational means the deterioration which overtakes the populations of cities and towns. Some of these reforms may be good in themselves, or at least better than others, but they all have the dangerous tendency to conceal the main issues and thus to interfere with right action, even by those who consider the welfare of their children as not merely incidental to other interests, financial or social. Every year thousands of devoted parents move to towns and cities in the mistaken belief that they will benefit their children by sending them to larger and more specialized schools. They often leave behind much more truly educational conditions than any they can find in the cities.

The physical and moral degeneracy of city populations

has long been recognized, but the intellectual deterioration and its equally inevitable causes are generally overlooked. Education has become a cult, and even a superstition. There is widespread dissatisfaction with the actual results of the schools, but everywhere the same confident hope that some new jugglery of educational fads is about to protect the younger children, at least, against the evil estate to which parental folly continues to expose them. Burnt children avoid fire, but disappointed parents find no alternatives.

The mental conditions of agriculture are just as essential to the normal development of the human mind as air, food and exercise for the development of the body. Nature is highly complex, and also exceedingly fine-grained; it is only in contact with this multiplicity of fine-grained facts of nature that fine-grained perceptions are developed by the child. Sensitive feelings there may be, and even supersensitive, without such contact, just as vegetables in the cellar may send out stems much longer than in the garden, though pale and spindling. Human culture, when set apart from nature, is only a hothouse plant, unable to maintain, justify, or enjoy its own existence. Much less does it furnish a true basis of judgment in the study of the general problems of human development.

The education of the children of city and town populations is truly a humanitarian task of vast proportions. City schools, no less than asylums and jails, are charitable and disciplinary institutions required by the community for the care of the superfluous and troublesome elements of the population. The worse the home conditions, the better, by contrast, are the schools, but this does not prove that schools can supply a complete education, or even its most important elements. Children are obviously out of place in cities. Flat-owners who refuse children as tenants might justify their course by motives of true philanthropy, and

set a good example for the shops, factories and schools. The city school is often only an educational sweat-shop. The slum children are receiving all the pity, but well-to-do parents are committing the same unconscious crimes without the excuse of poverty. Some methods of education may retard more than others the inevitable degeneration, but there is no reason to suppose that even the most complete and elaborate of formal systems can counteract the effects of shutting children away from nature and from their parents during the years when the senses are susceptible of their most rapid and permanent progress.

The attempt has often been made, though never with conspicuous success, to graft agriculture and other natural sciences into scholastic courses of study, but formal learning leads away from nature rather than toward it. Educational systems tend always to prefer formulated knowledge, for this avoids the endless difficulty of preserving connections with concrete facts. Such freedom from practical contacts was what was originally meant by "liberal education," the education of the free, who did not have to work, as distinguished from the technical training of servile mechanics and artisans.

Nature has not been formulated, and never will be, for each species of plants and animals is following its own separate pathway of evolution. There are no general laws or principles of botany, zoology or agriculture. The characters and habits of the different kinds of plants and animals are as arbitrary as the grammatical rules of the different languages, and with the same multiplicity of exceptions. To formulate nature is as hopeless as the writing of general rules of grammar to apply to all languages. Some even deny that knowledge of nature, agriculture or language is really science, because no general laws are available for purposes of formal instruction.

It is generally agreed that the complete mastery of a

foreign language is seldom possible if the undertaking be deferred to maturity. Particular muscles, nerves and brain-cells are developed, according to students of speech, to form particular sounds, and these are not readily added or adapted in the adult anatomy. The multifarious agricultural contacts with nature are similar; unless supplied in childhood and youth they seem to find no adequate entrance or function in the mind. This may account for the wide differences of standpoints and methods of thought between country and city people. The farmer may assimilate himself to the city, but the city-bred man, even with the most bucolic intentions, very seldom comes to be more than an "agriculturist." It usually requires two generations to fully shake off the bondage of the city, and the feat is seldom accomplished.

If the ability to learn languages be well exercised during childhood and youth a large measure of it can usually be retained in maturity, and even in old age. Powers of perception, if allowed to develop in the early years, need not be lost in the later; but formal education often relegates the perceptive talents to a long period of disuse while attempting to bring the rational faculties to a precocious expansion.

The mind of childhood, rather than that of later youth or manhood, is adapted to absorb the vast number and complexity of details with which all nature contacts abound. Not to have these contacts at the right time of life is to be always out of joint with the terrestrial environment—to remain a transient boarder and never completely qualify as a true inhabitant of the earth. Erudition, skill, and even leadership, may be acquired by those who lack these primal contacts, but their minds are without adequate backgrounds, their thinking essentially superficial, and their ideals vain and sterile. It would be strange, indeed, if people of great natural ability did not abound in

cities, for city populations are continually recruited from the most capable people from the country. Cities have the best of the human material, but they spoil it in the making, and must continue to import rural talent to make good the deterioration.

The need of rehearsing these well-known facts becomes more acutely apparent with each new suggestion of an improved method or detail of formal instruction. That there is somewhere a fundamental deficiency with our theories and systems of education is widely appreciated, and reformations are being attempted in many directions. Thus Mr. Arthur Somervell has argued with much force that the deficiencies of modern education are to be explained by the lack of adequate musical training.* Judged by their artistic results, the Greek methods of education are shown to have been much more efficient than ours. This is ascribed to the fact that music, the primary element with the Greeks, has been neglected or omitted altogether in modern systems. Language and mathematics constituted our so-called "classical education" before the demands of science secured recognition and diminished still farther the time available for musical training.

This claim of fundamental educational importance is not made, of course, for music in the modern, narrowly technical sense, but as including all forms of training of the sensibilities of rhythm and proportion. In spite of many difficulties of expression, an excellent argument is developed to show that such esthetic training may have an important function in aiding the development of truly enlightened judgment, both personal and national. The Japanese are cited as a modern instance of the efficiency of a nation with a universal musical training. England is also contrasted with the more progressive modern Ger-

*Arthur Somervell, "Music as a Factor in National Life." *Monthly Review*, May, 1905.

many, where English dramatic poetry is used more extensively than at home.

With the Greeks music seems to have included all forms of rhythmic activity and expression, but moderns have made music something very different. It is no longer primarily a form, method or accompaniment of activity or expression, but a substitute for activity and expression. Instead of a stimulant, it has become a narcotic. Its crowning and most consistent development is the musical box, which helps us to do nothing and think of nothing. The ancient music had important functions, like the sacrifices and incense which youths burned before the shrines of their gods and heroes, resolving to emulate their warlike virtues. Our modern youths burn their incense in the form of cigarettes, and thus secure contentment without the need of effort. Incense and music have uses as long as they contribute to beneficial forms of activity, but may become worse than useless when treated as objects of gratification in themselves.

Such by-paths of barren specializations of normal powers and activities are frequent along the whole course of human development. A man with normal taste for food and drink may degenerate into a glutton, a gourmet, or an inebriate. The instincts which lie at the basis of the family and the preservation and development of the race are likewise capable of endless perversions. Every taste or talent can be prostituted and sterilized in one way or another, even including arts, sciences and religions. There is no salvation in any of those things, of and by itself, unless they lead toward development. Music which has no relation to useful activity is unprofitable and decadent. It may afford a relatively harmless antidote or diluent of more injurious perversions, but it will not build our civilization nor regenerate our society.

The value of the musical training advocated by Mr.

omervell appears to lie not only in the better develop-ent of the esthetic faculties, but in the enlargement of e powers of expression. Rhythmical methods of ex-ession are actually the most efficient methods. Mr. omervell cites Elizabethan England, the "nest of singing rds," as an example of the practical benefit of "the great iaginative training on which all right education should built up." It is in these periods of literary climax that e world's accumulated experience is brought into the earest expression.

By musical training it is hoped to correct the lack of iagination which Mr. Somervell perceives to be a very rious deficiency. But there must be materials of imagi-tion as well as methods of encouraging activity of imagi-tion. The imagination which is the worthy object of lucational solicitude is not mere vagrant fancy, but the ower of the mind to reproduce, combine, compare and aborate the data of previous experience. Effective im-gination is as impossible without clear perception as vi-on without light. To imagine clearly is to see things in ght relations. To perceive dimly and imagine vaguely to have a bog under foot and a fog overhead. Truth ppears stranger than fiction, because fiction is our usual ate, truth a rare illumination.

The Greek child appears to have obtained the matter as ell as the method of imagination from the close and accu-ate perception of facts of nature, family life and physical raining, as well as from "the traditional tales of his race," nost notably, of course, from the vivid perceptions of the oems of Homer. These unique prehistoric compositions ttained wide popular appreciation while the Greeks were till simple farmers, and before they had become ac-uainted with the arts of writing and of formal education. We are well warned, therefore, that the supreme beauty nd efficiency of the Greek mind was developed under con-

ditions widely removed from our modern ideals of education, and also far different from those of the already degenerate Athens of Socrates and Plato.

Educated Greeks of the Socratic period were much more interested in the framing of theories of beauty and morality than they were in the practice of these arts. Three centuries later, in the times of Plutarch, Greek gentlemen still affected to admire statuary, but could no longer understand how the carving of statues could be a pleasure. Homer, on the other hand, represents Ulysses as quite as proud of his skill in plowing a furrow or in building a bed as of his exploits as warrior and navigator. The charm of the Homeric age is that men saw the world clearly, and took pleasure in the seeing. They were still as gods, for life and its activities were a joy to them. Nor is this spirit altogether departed from the world. Echoes still linger on our Western prairies and other frontiers of civilization where the children have not heard the doctrine of the overworked school-mistress that "all learning is painful."

The Greek theory of formal education was one of the products of the Greek genius, instead of having produced that genius. Moreover, the theory was a failure, for it did not save the Greek civilization, and may even have hastened its degeneration. Greek culture blossomed into artistic expression very rapidly, and deteriorated with equal promptness. Pisistratus, who collected the poems of Homer from the rhapsodists or professional memorizers, and reduced them to writing, died only sixty years before Socrates was born, and only a hundred years before Plato. Pythagoras and the natural philosophers, more truly scientific than Plato, came earlier, some of them well back toward the uncertain antiquity of the Homeric age, before written language and formal education began to be cults, or objects of value and excellence in themselves. Plato seems to have done more than any other one man to tie

the human intellect fast in the net of deductive logic, in which it still remains very much entangled. Reasoning from generalized abstractions instead of from clearly formed concepts is still frequently attempted, even in the concrete physical sciences.*

We may not hope to solve the problems of education, any more than those of politics or religion, by turning the centuries back. Ideals are vain which do not enable us to see possibilities of beauty in our own time and in the future, and not merely in a lost antiquity. Science, though it dispels myths, can furnish a wealth of materials for the enrichment of the imagination—far beyond the dreams of the Homeric or any other age. But who shall bring these conceptions into clear expression, and make them the objects of living interest and youthful ambition?

"The study of science can undoubtedly serve to draw out in the student a perception of the rhythm and unity of things, and where there is even a touch of the true scientific imagination, it must reach heights of which the ordinary man can have no conception. But if, as is frequently urged, scientific training is substituted in early years almost entirely for art and language, it seems to me there is one serious risk. The purely intellectual and unimaginative scientist is far commoner—strange as it may seem—than the purely intellectual and unimaginative artist; and a purely intellectual interest in science is so much more easily aroused in a child, than a purely intellectual interest in music, painting, or poetry, that a child so taught, may wander for years in a dry desert of fact."

*"For in Greece the development of thought reverses the direction taken in all other nations. It begins apparently where the others end, and it ends where the others begin. Broadly viewed, the movement of Greek thought is from science to theology, or rather theosophy; elsewhere it starts from theology and struggles towards science. The emancipation from the theological preoccupations, with which the scientific philosophy of the Ionians appears to have started, is an extraordinary and unique phenomenon. In Egypt, in Babylonia, in India, reflection never frees itself from the fascinations of religious speculation...." Schiller, F. C. S., 1906. "Plato and His Predecessors," *The Quarterly Review*, 204: 70.

Mr. Somervell might have added that there is no part of the field of education in which the lack of a developed imagination becomes so painfully evident as in science itself. Unimaginative scientists there may be, but they are not very intellectual, nor very scientific. Scientific erudition is often as barren and unprogressive as any other formal learning. Imagination is required in science, not only to project new theories, but to enable us to perceive and readjust ourselves to new facts. If such readjustments could be made promptly the progress of science would be much more rapid than it is, particularly in the biological sciences where many of the most important facts have to be learned inferentially. Darwin's doctrine of evolution was rejected by Owen and Agassiz, probably the two men in all the world who knew the most facts in its favor and could have given it the strongest and most effective support. And in matters of less general interest the same phenomenon is encountered. A theory-subverting fact or an improved classification may not be admitted by the contemporaries of its discoverer, but often waits until later generations have grown up, to whom the idea does not come as new, and thus makes less demand for a reconstructive imagination.

Failure to appreciate the discoveries of others limits scientific originality, for every new fact may serve in turn as the standpoint of further discovery. Ambition of discovery blinds the eyes of the perverse originalist. Science is advanced by a lively interest and a clear apprehension of the facts, without particular regard to novelty. The idea that young men can be trained to become scientific investigators is largely fallacious. If they are not investigators during the period of training, they do not become investigators afterward. We have but to preserve and develop the normal curiosity of the child, for of such is the republic of science.

We want what the Greeks had, and something more; and not the educational methods merely, but the reasons for them, clearly understood and reduced to definite expression, so that the race may not again lose the pathway which leads to the development of its higher powers. Many civilizations have grown up, but none has yet emerged into the light of full consciousness, so that it knows where its strength lies and how to maintain itself on the pathway toward further progress. This is the central problem of expression, to which all others are merely preparations and accessories. In the broadest sense it is an educational problem, for that race best assures its existence which best provides for the full development of the successive generations.

To break the physical contacts of the home so that the children are not nourished, sheltered, clothed and washed, but condemned to squalor and overwork, is generally appreciated as a crime, but it is no less definitely injurious to deprive the children of other parts of their post-natal inheritance, the accumulated experience of the race, which can be transmitted only through adequate associations between the generations. It is not enough that normal babies be born, and that children have pure air, wholesome food and adequate exercise, so that their bodies attain normal physical development. Even when these material conditions are supplied they carry the young only to the status of savages, unless effective contacts with the older members of the community are maintained.

The human species differs from all others in that the parental instincts are not temporary, but continue to strengthen with age. It is often not the parents themselves, but the grandparents, who supply the widest experience and the most sympathetic relations, especially with the younger children. The importance in human evolution of this overlapping of the generations becomes

very obvious among primitive peoples, who often marry young, before the parental instincts are strongly developed. The care of the children devolves largely on the grandparents, leaving the active members of the community more free for labor or the chase. While the social systems of savages are not always to be accepted as models for civilized man, there can be little doubt that civilization is losing much through the waste of grandparental instincts involved in our selfish individualism and our blind faith in formal education.

It is only in agricultural communities that these necessary contacts with nature and between the successive generations are well assured; just as it is only in agricultural societies that civilizations are developed and maintained. As soon as the more capable elements of a race pass definitely away from the agricultural status and become urban parasites, the deterioration of its civilization begins.

Behind the Athens of schools and theories of education was the life of the "Heroic Age," when the Greek race developed its unrivaled excellence of taste and talent, so that it could borrow letters and other foreign arts and promptly refine them into patterns of excellence for all succeeding ages. What was the life of the Greeks, and of Greek boys and girls during this pre-scholastic period? The educationists have not told us about this—probably they are not interested. It has not occurred to them that the decline of Greek life could have any possible connection with the attainment of that degree of wealth and culture which betrayed the Athenians to resign the care of their children to slaves and pedagogues, grammarians and rhetoricians.

We have taken too seriously this outer shell of the Greek culture, just as the African savage imagines that he is civilized as soon as he has covered his skin with a suit of filth-accumulating clothes. Men who clearly owe their

success in life to free contacts with nature and with their fellows, regularly make use of their wealth to deprive their children of any similar opportunities of development. If the young people are diligent and tractable they are kept in schools for twenty years or more, in the complacent belief that only in this way can the full parental duty be performed, so great is our blind and superstitious faith in formal education.

Great men of all the ages have commended solitude as one of the most important of educational factors. A mind unable to support its own existence and follow its own interests without external direction or compulsion is either of inferior quality, or lacking in development. And yet what proportion of our normal and naturally capable young people become self-acting or attain to self-knowledge? Solitude can not be provided on the factory system, and educators have ceased to consider it, despite all the opinions of saints and sages. Policies of educational centralization are driving the lambs in larger and larger flocks, and would allow only the maimed or the incapable to wander alone and come into direct relations with their environment.

It is true that solitude and nature contacts are not enough. Human associations there must also be, if a worthy picture is to be painted on the background which nature can prepare. Farm life is often not merely rude, but sordid, and very unfavorable for the continued development of the higher human qualities. But this barbarism still lingers among us largely because we have relied too much on formal education, intsead of perfecting the other arts of life. As schools are now, the development of talent in the country lad, instead of qualifying him to work an improvement in the home community, usually makes him only an easier recruit for the sterile and degenerate existence of the city.

The school has become an agent of social disorganization, weakening the contacts between successive generations. The boy spends his time with his undeveloped contemporaries, instead of with his experienced elders. "Send your son to college and the boys will educate him," was Emerson's assurance, but the chances are that they will only qualify him as a member of their own premature and reactionary social organization, occupying his mind with fraternity or institutional interests, rather than with truly human points of view. The Athenian educational industry did not develop to the modern factory system; it reached only the shop stage. Nevertheless, the conditions of childhood and youth were already markedly different from those of the earlier and more strictly agricultural period, when perceptions of nature were so scientifically sensitive, accurate and affectionate. Instead of having less scientific training than the modern child, the young Greek of the Homeric age appears to have had much more intimate and adequate contacts with nature and with his elders than our modern system of education provides, or even permits.

If this curtain of primitive life could be raised we would doubtless find some strange and unexpected things. How many of our school-boys know the varieties of domestic fruits, and what are their characters and qualities? Fruits, even to most farmers, are merely a commodity, something to eat and to sell. Farmers from Maine to California have planted their orchards with inferior sorts because their urban customers have lost a discriminating knowledge of varieties, and now buy fruits mostly from size and external appearance.

Even boys and girls on the farm often fail to learn the varieties which the home acres produce. The children are too busy going to school, and the fathers too busy earning the money to send them. Knowledge of varieties

of domestic fruits is not considered in schools, except for courses in pomology in a few agricultural institutions. And yet it is just such knowledge, practical, detailed, and truly scientific, which Homer represents as the most vivid recollection of childhood, rehearsed by the returning hero Ulysses to his aged father, to prove himself the long-lost son.

"Yet again, if thou wilt, I will tell thee the trees the orchard through
Which thou gavest to me long ago, when I asked thee of all things there,
The lad running after thy steps through the garden everywhere:
And we passed through the selfsame trees: thou didst tell me the names of them then.
Ten apple-trees gavest thou me, and pear-trees three and ten,
And fig-trees forty; and fifty rows of the vine didst thou name,
Saying 'These do I give thee'—the ripening season of none was the same.
And of manifold kind are the clusters that hang on the branches thereof,
When the seasons with sunshine and rain beat down in their strength from above."*

The conditions of agricultural life in early Greek times provided these adequate and sympathetic contacts between the generations. They supplied a truly scientific basis for the unique perfection of classical culture and art. Our modern theories and practices of formal education ignore these necessary contacts, and deceive us with the vain hope that normal human development can be attained without them.

Ideal education is the condition in which there is full

* Arthur S. Way, *The Odyssey of Homer*, 1904, Book XXIV, p. 317.

development of human powers and talents, of body, mind, and spirit, or of hand, head and heart, as the popular alliteration has it. Education is not, primarily, a matter of schools and systems of formal instruction, but of maintaining the contacts with nature and with the preceding generations. Institutions which weaken these contacts are not truly educational, but have the contrary effect of arresting the development, both of the individual and of the race.

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Washington, D. C.

THE ORACLE OF YAHVEH.

HE URIM AND THUMMIM, THE EPHOD, AND THE BREAST-PLATE OF JUDGMENT.

HE ancient Hebrews had a method of consulting God by an oracle of lots called "Urim and Thummim," and connection with it the ephod is mentioned as the utensil divining.

Though the oracle by the Urim and Thummim played important part in the ancient history of the people of ael, its practice fell gradually into disuse. It was first ndoned, presumably as a relic of paganism, and its thods were absolutely forgotten during the exile, while the post-Exilic age the loss of it was deeply deplored. ephus[1] says that two hundred years before his time Urim and Thummim had ceased to light up, but his tement is based on the very lowest margin, for they no longer mentioned as being consulted after Solomon's gn.

How much the oracle of the ephod by the Urim and ummim formed part of Israel's religion previous to the ple reform appears from Hosea[2] who prophesies that he children of Israel shall abide many days without a g, and without a prince, and without a sacrifice, and hout an image, and without an ephod, and without tera-m."

Our text of the prophet Hosea adds: "Afterward shall

[1] Antiqu. III, 7. [2] iii. 4-5.

Accordingly we have three sources of a widely different aracter on the Urim and Thummim as well as the instruents connected with the oracle of Israel: (1) the refer-es to them in the historical books, (2) the description the dress of the high priest, and (3) the passages in ilo and Josephus as well as all later rabbinical explana-s. It is obvious that only the passages in the historical ks can be relied upon. The utensils of the post-Exilic e are the manufacture of an archaistic reform, for the ence of this divine oracle is sorely felt as early as in days of Ezra and Nehemiah, as indicated in the passage t men whose Hebrew descent was doubtful should not priests, and it was decided that "they should not eat of most holy things until there stood up a priest with Urim l Thummim," which means that their unproved claims ld be tested only by the unequivocal verdict of a direct l divine decision not obtainable at the time.[5]

HISTORICAL REFERENCES.

The way in which the ephod was employed in the oracle Urim and Thummim does not receive a detailed explana-n in any of the historical books of the Old Testament. is assumed that the reader is familiar with it. Some-es the ark takes the place of the ephod. The man who nts to consult the oracle says: "Bring me hither the od" (1 Sam. xxx. 7) or "Bring hither the ark of God" Sam. xiv. 18). The ephod or the ark was brought and e hand was needed to do the work, for when Saul wanted stop the consultation, "he said unto the priest, 'With-aw thine hand.' "

The ephod was worn by the Levites, priests and proph-ts, (1 Sam. xiv. 3) and in 1 Sam. xxii. 18 we read of fourscore and five persons that did wear a linen ephod."

[5] Neh. vii. 65; Ezra iii. 63; 1 Esdras v. 40.

It is stated that in the days of Moses everything, both the going out and the coming in, was undertaken only after consulting "Eleazar the priest who shall ask counsel after the judgment of Urim before the Lord." (Num. xxvii. 21.)

Once the Israelites had omitted to consult Yahveh (Joshua ix. 14), and it is plainly indicated that in consequence of it they pursued a wrong policy toward the Gibeonites.

When not used the ephod was carried on the body, and it is spoken of as being girded around the loins. The verb *aphad*,[6] from which ephod[7] is derived, means "to gird."

In the priestly writings the belt is specially mentioned as distinct from the ephod, and it is called *khesheb*,[8] i. e., "the thing curiously wrought," from *khashab*,[9] "to think, to muse." In the historical writings, however, the *khesheb* is unknown.

The Urim and Thummim are said to be put into the ephod and so the ephod is commonly regarded as a pouch. Yet there are other data which seem to contradict this view.

The ephod is frequently described as being made of linen, but we have also references to it as manufactured of metal. Gideon melted the spoils of war, golden earrings to the weight of a thousand and seven hundred shekels of gold, and made of them an ephod (Judges viii. 24-27). Further we read that the sword of Goliath was "wrapped in a cloth behind the ephod," (1 Sam. xxi. 9), which accordingly was not a mere pouch but a solid thing standing erect upon the altar.

These apparent contradictions have suggested the idea to biblical scholars that the word ephod denotes two different things, (1) a garment that is worn, and (2) an idol made of metal which formed a part of ancient idolatry,

[6] אפד [7] אֵפוֹד [8] חֹשֶׁב [9] חשב

an interpretation which also did good service to explain why the ephod is mostly mentioned with reverence and sometimes counted among the paraphernalia of paganism, to be discarded and looked upon with scorn by the reformers. Hosea (iii. 4) classes it in the same category with the teraphim, the pessel, and massepah (i. e., the graven and molten images).

It seems improbable, however, that the word "ephod" should have meant two different things, an idol and a piece of dress, but the several traditions can easily be explained when we consider that the ephod was always a receptacle. The portable ephod must have been worn as a pouch dangling from a belt. Possibly the strings that closed it served at the same time as a girdle. This form of the ephod does not exclude that other receptacles were used for the same purpose. We know that the ark of Yahveh was sometimes substituted for the ephod, and so it is by no means impossible that ephods could be made of metal as a vase that could be carried in the hand, or a large urn that was too weighty to be carried about easily and was placed upon the altar. Such an urn which was used for divining would naturally be regarded as sacred, and, representing the oracle of Yahveh, might have easily received undue veneration, hence its use as an idol.

In the story of David we read that he danced before the ark girded with a linen ephod (2 Sam. vi. 14) and so incurred the contempt of his wife Michal, who reproached him for "uncovering himself" (vi. 20) and denounced his demeanor as improper. The probable explanation of this passage is that in wearing the ephod David followed the old practice of prophets of a more primitive age in being otherwise naked,—a custom which is still observed in many religious ceremonies.

In the post-Exilic age the ephod and the Urim and Thummim appear to have become an exclusive privilege

of the high priest, but in olden times it seems that any priest could use them and there are indications that the Levites were thought to understand their use as if by an inborn instinct of the race. We read for instance in the story of Micah (Judges xvii. 4 ff.) whose "mother took two hundred shekels of silver and gave them to the founder, who made thereof a graven image and a molten image and they were in the house of Micah." But when a Levite of Bethlehem-judah, of the family of Judah, passed through his place, he engaged him for an annual salary of ten shekels. Presumably the Levites were originally priests and might be descendants of any clan, but when their profession became more and more hereditary they were regarded as a special tribe.

We read in the blessings wherewith Moses blessed the children of Israel before his death (Deut. xxxiii. 8):

"And of Levi, he said, Let thy Thummim and thy Urim be with thy Holy One whom thou didst prove at Massah and with whom thou didst strive at the waters of Meribah."[10]

THE MEANING OF THE WORDS.

The Greek versions of Urim and Thummim are *δήλωσις καὶ ἀλήθεια* (i. e., "revelation and truth") and *φωτισμοὶ καὶ τελειώσεις*[11] (i. e., "the shining ones and perfections"), or *τελειότης καὶ διδαχή* (i. e., "perfection and instruction").

Latin translators follow their Greek predecessors. Symmachus uses the terms *ostensio* and *demonstratio et veritas*. Jerome translates *perfectio et doctrina*. The Vulgate translates *doctrina et veritas* or *perfectio*.

The English translation for Urim and Thummim is

[10] The names "Massah" and "Meribah" refer to the incidents in Israel's pilgrimage through the desert (mentioned in Ex. xvii. 7, and in Num. xx. 13) when God miraculously supplied the people with water. *Massah* means "temptation," and *Meribah* "water of strife."

[11] Aquila and Theodocion.

"light and perfection," or for Thummim alone "perfect lot." Luther translates the two terms by "light" and "right" (*Licht* and *Recht*).

Among modern translators Luther clings most faithfully to the tradition suggested by the Greek meaning which chimes in well with the interpretation of Philo who thought that, in indication of an affirmative answer, the gems in the breastplate would light up. The opinion that "light and right" were represented in the Urim and Thummim has found considerable support in the fact, related by Diodorus (1, 48, 75) and Aelianus (*Var. Hist.* XIV, 34), that the Egyptian high priests, when appearing in court to sit in judgment, wore breastplates with the symbol of justice and truth. In the monuments of Egypt we

find this emblem, the figure of *Ma* frequently grouped together with *Ra*, the sungod, as it appears in the adjoined illustration reproduced after Wilkinson from Riehm's "Handbook of Biblical Antiquity," the standard work of German theology.[12]

If we consider that Ma, the goddess of truth, with prefixed article reads *Tma*, we can find a similarity of sound between *Thummim* and *Tma* and also between *Urim* and *Ra*. The latter word *Ra* recalls *Urim* still more when we compare it to the Coptic word *eroyoïni*, which means "illumination" and may have had the meaning of "revelation."

The Hebrew word *Urim*, if it is originally a Hebrew word, can be derived directly from *Or*,[13] "light," and

[12] Riehm, *Handwörterbuch des biblischen Alterthums*, I, 931.

[13] אוֹר

should in that case be pronounced *Orim*,[14] not as the text reads, *Urim*.[15] The Greek translations still indicate this meaning.

The meaning of Thummim is not easily determined, for we can not doubt that the Greek translation "truth" is more an interpretation than a literal version. The other translation preserved by Jerome (*perfectio*) may be more correct just because it is more difficult to understand, for it seems to be based upon a more ancient and more obscured tradition.

Considering the fact that the words *urim* and *thummim* are two plural terms, and that they denote a contrast; that they were lots and must have been two sets of objects opposed the one to the other; we ought to find this contrast in the words themselves, and we see a possible solution in the proposition to explain "Thummim" as the symbols denoting innocence and "Urim," those denoting guilt, in which case, if the former is identified with the adjective *tamim*,[16] "innocent, guiltless, upright," the latter would have to be derived from *arar*,[17] "to curse." Plausible though this seems at first sight, we reject it because good and evil are not so sharply divided between the two, and an application to juridical cases is by no means a primary feature of the oracle.

The German translation, "light and right," seems to me as untenable as the English one, "light and perfection," for after all what we need is a contrast,—moreover a contrast between two sets, and assuredly not between two things of the same kind. If a lot of the set Urim means "light," any one of Thummim ought to mean "darkness"; if the former means "yes," the latter means "no"; if one denotes "guilty," the other indicates "innocent," but it acquires the meaning by contrast only.

[14] אוֹרִים [15] אוּרִים [16] תֻּמִּים

[17] אוֹר perhaps related to the Latin *urere*, "to burn."

Accepting the traditional and most probable derivation of *thummim* from *thamam,*[18] "to become perfect," we are inclined to explain the term to mean "the perfected ones," as denoting things which have reached their consummation.

The term *orim* as derived from the root *or* means "light," or "sunrise," or "morning," or "beginning," or "east"; *tom,*[19] perhaps *tam*[20] or *tum,*[21] should mean "completion," or "sunset," or "evening," or "end," or "west." They may fitly be translated by "the shining ones and the dim ones," or "start and finish," or "motion and rest," or "beginning and end," and when we consider that they were carried in a bag, it is more than probable that they were pebbles of two different colors, presumably white and black.

Though we may be pretty well assured that such was the meaning of the words *urim* and *thummim* and that they were so understood in the times of Samuel, the ultimate derivation of these terms may, for all we know, be Babylonian or even Sumerian, and attempts have been made to trace them in cuneiform inscriptions. *Urim* has been identified with *U'uru* (Piel of *a'uru*), kin to the noun *urtu,* "decision, command"; and *Thummim* with *tamitu,* "oracle." We must be satisfied with mentioning these propositions as not impossible and abstain from any further discussion for lack of definite evidence.

HOW THE ORACLE ANSWERED.

The answer which the Urim and Thummim gave when consulted was sometimes limited to a selection between yes and no, (as, e. g., in 1 Sam. x, 19-21), or between guilt and innocence (as in Joshua vii, and 1 Sam. xiv. 38-46). In the last-mentioned instance Saul chooses for himself

[18] תמם [19] תֹּם [20] תָּם [21] תֻּם

"Thummim," and it seems a clear instance of an alternative decided by lot.

The Septuagint which must either have been translated from a more complete text, or intends to render the situation more indubitable, relates Saul's prayer thus: "Lord God of Israel, why hast thou to-day not answered thy servant? If the iniquity is with me or my son Jonathan, let there be Urim, and if it is with the people, let there be Thummim."[22]

As a rule a repeated choice is made between two alternatives until the final decision is reached. When Samuel consulted Yahveh for the appointment of a king, he limited the choice until the lot fell on Saul. In the same way the cause of God's wrath was determined by singling out the guilty party when in one instance the lot fell on Achor (Josh. vii) and in another on Jonathan (1 Sam. xiv, 42).

Sometimes the oracle refuses to answer (1 Sam. xiv, 37), and this is regarded as a sign of God's wrath; as, for instance, in the case of Saul who had been rejected by Yahveh. We read that "When Saul enquired of the Lord, the Lord answered him not, neither by dreams, nor by Urim and Thummim, nor by prophets."[23]

Sometimes the oracle yields a definite answer of which case the following instances are preserved:

When Israel was ready to invade Palestine, Yahveh was consulted and the answer was given: "Judah shall go up: behold I have delivered the land into his hand." (Judg. i. 2.)

When Israel waged a war of extermination against Benjamin the question arises, "Which of us shall go up first to the battle against the children of Benjamin," and the oracle answers: "Judah [shall go up] first." (Judges, xx. 18.)

The children of Benjamin were victorious and Israel

[22] 1 Sam. xiv. 41. [23] 1 Sam. xxviii. 6.

suffered a grievous defeat at Gibeah. So they prayed and fasted and burned incense to Yahveh again, and when next they consulted the oracle, the answer came: "Go up, for to-morrow I will deliver them [the children of Benjamin] into thine hand." (Judges xx, 28.)

With reference to the place where Saul could be found after his election as king, the oracle declared: "Behold, he hath hid himself among the stuff." (1 Sam. x. 22.)

David consulted the oracle of Yahveh not less frequently than his predecessor. On one occasion he received the following answer:

"Arise, go down to Keilah, for I will deliver the Philistines into thine hand."

When the Amalekites had made a raid on Ziklag, David consulted Yahveh. We read in 1 Sam. xxx. 7-8:

"And David said to Abiathar the priest, Ahimelech's son, 'I pray thee, bring me hither the ephod.' And Abiathar brought thither the ephod to David. And David enquired at the Lord, saying, 'Shall I pursue after this troop? shall I overtake them?' And he answered him, 'Pursue; for thou shalt surely overtake them, and without fail recover all.' "

It must forever remain an open question whether the oracle yielded these answers in the form they are reported or whether they were mere repetitions of the several questions answered in the affirmative.

THE BREASTPLATE OF JUDGMENT.

In the description of the dress of the high priest the Urim and Thummim are mentioned in connection with both the ephod and the breastplate of judgment. The main passage is in Exodus xxviii, which is to be compared with Leviticus viii, both belonging to the priestly writings and now agreed upon to be post-Exilic.

The breastplate of the high priest is called in Hebr *khoshen hammishpat.*[24] The word *khoshen* is of doubt meaning and of unknown etymology, but *mishpat* is w known and means "judgment, decision, destiny." T breastplate of judgment was ornamented "with cunn work" and was wrought of gold, blue, purple, and scar

THE JEWISH HIGH PRIEST IN HIS PONTIFICALS.

and of fine-twined linen. The high priest wore it on breast, fastened with chains of pure gold on the four c ners. Twelve precious stones, bearing the names of twelve tribes of Israel, were set on it in four rows. breastplate was tied by its rings to the rings of the epl

[24] חשן המשפט

THE BREASTPLATE OF THE JEWISH HIGH PRIEST.

Reproduced by permission from a colored plate in the *Standard Dictionary*.

h a lacing of blue (Ex. xxviii. 28) so as to be insep-
ble from the latter, and here the Urim and Thummim
re kept.

The proposition of Josephus (Ant. III, 8, 9) that the
cious stones on the breastplate were the Urim and
ummim, is refuted by the fact that they are distinctly
ntioned in one and the same passage (Ex. xxviii. 17 and
) as two different things and so this theory needs no
utation; but the idea that the breastplate was a recep-
le or, as Professor Moore proposes, a pouch, and was
de for the special purpose of receiving the Urim and
ummim is commonly accepted and seems at first sight
te plausible. It is based upon the translation of the
oted passage in the authorized version which is gram-
tically quite irreproachable, yet must be rejected as im-
bable and lacking, outside of this isolated passage, any
sitive support.

Here are the objections that should be made.

We know positively that the ephod, and not the breast-
te, was the receptacle of the Urim and Thummim. Is
probable that the breastplate was only another form of
ephod? If so, why did the high priest wear both the
astplate and the ephod? Further if the breastplate was
ouch as much as the ephod, the main purpose of the
astplate must have been to serve as a receptacle, but we
ow that its significance consisted in the twelve symbolic
ms which were placed on it.

The theory that the breastplate was a pouch rests
olly and solely on this one passage in Exodus xxviii.
, which in our authorized version is rendered "And thou
alt put in the breastplate of judgment the Urim and
ummim," but we must bear in mind that the original is
t so unequivocal as the English. The preposition *el*[25] is
ch less definite than our "in" or "into," and may as well

[25] אֶל

mean "behind" or "below" or "underneath." In fact the text suggests the latter and I should propose to translate it by "under" in preference to the "in" in the sense of "into"; for there is an obviously intentional contrast between the prepositions *el* and *'al*,[26] suggesting that the Urim and Thummim should be between two things, under the breastplate and above the heart. We translate as follows: "Thou shalt put *under* the breastplate of judgment the Urim and Thummim, and they shall be *above* the heart of Aaron when he comes *before* [literally 'to the face of'][27] Yahveh."

The breastplate of judgment is an emblem of authority, and its entire significance lies in the symbols shown on its surface. It is a tablet of deep mystical meaning and for that reason it should cover the Urim and Thummim kept in the ephod. It sanctifies them and displays in a duodecimal arrangement of gems the secret of their efficiency as a divine oracle.

THE BABYLONIAN TABLETS OF DESTINY.

It is interesting to notice that a utensil similar to the Hebrew breastplate of judgment is mentioned in Babylonian inscriptions; indeed the institution of a breastplate as an emblem of highest authority—nay also wisdom and magical power, goes back to the most primitive days of Akkad and Sumer. In the Creation Epic we read that Tiamat, the monster of the Deep, selected Kingu as her consort and as the leader in the battle against the gods. In this capacity Kingu received the tablets of judgment. We read in this ancient cosmological epic:

"Tiamat, Mother of the gods, rebelled against them,
A band she collected wrathfully raging,
. . . . . .

[26] עַל [27] לִפְנֵי

She raised Kingu and made him great in their midst,
'The army to lead, that be thy mission.'

. . . . . .

She gave him the destiny tablets, placed them upon his breast.
'Thy decision be valid; firm shall stand the behests of thy mouth.' "

When Kingu was overcome by Marduk, it is especially ntioned that the victorious god took away from Kingu tablet of judgment. We read (*ibid.* p. 418):

"But Kingu who had power over them all [viz., the host of Tiamat],
Him he [Marduk] vanquished and dealt with as the other gods,
He snatched from him the destiny tablets which hung on his breast;
He sealed them with his seal and hung them on his [own] breast."

When the gods were assembled in council, Marduk ore the destiny tablets on his breast.

MEDURANKI'S TABLET OF THE MYSTERIES OF HEAVEN AND EARTH.

The tablets of judgment are furthermore mentioned in e primitive mythology of the Babylonians. We read in text discovered in Assurbanipal's library (published in e original, transcribed, and translated by Schrader) the llowing passage which mentions a tablet of judgment orn by the high priest and used for divination. The text ads:

"Enme-duranki, King of Shippar, the favorite of Anu, el, and Ea, Shamash with Ebabbara....Shamash and

Ramman (Adad[28]) in communication [called (?) him]. Shamash and Ramman(Adad).... Shamash and Ramman (Adad) on a golden throne....To inspect oil upon water ....the secrets of Anu, [of Bel, and of Ea], the tablet of the gods, the tablets of spells(?)[29] of the mysteries of heaven [and earth], the staff of cedar, the favorite of the great gods, they ga[ve into his hand]. He himself, however, when he had rec[eived these things taught them to his] son....Shippar....Babylon....Sacrifices he offered and he made them abundant....To inspect oil upon water, the secrets of Anu, of Bel and [of Ea], the tablet of the gods, the tablet of spells(?), of the mysteries of heaven and earth, the staff of cedar, the favorite of the gods, gave he into his hand. The tablet of the gods, the tablet of spells(?), of the mysteries of heaven and earth, to inspect the oil upon water, the mysteries of Anu, of Bel and Ea, the spells(?) 'When Anu, and Bel, etc.'[30] and '....' they had command of. The sage, the initiated one, he who is in possession of the mysteries of the great gods, makes his son[31] whom he loves swear upon the tablet before Shamash and Ramman (Adad) and makes him learn 'When the Soothsayer'; he who is conversant with the oil, who also is of ancient family, is a descendant of Enmeduranki, the King of Shippar, who puts up the holy tablet of spells(?) and lifts the staff of cedar....King....Shamash....a creature of Nin-^{k}harsag[32] of priestly tribe, of pure origin, himself perfect in stature and all measures of his body, is allowed to approach before Shamash and Ramman (Adad), the place of divination and of oracles.

[28] Ramman is the thunder-god; he is also called "Adad."

[29] Schrader's word *omnen* is here translated "spell."

[30] The words in quotation marks are the beginning of a spell (or as Schrader translates, of an omen) the recitation of which exercises magic power.

[31] All priests are presumably regarded as the sons of Enmeduranki.

[32] Nin^{k}harsag, "Mistress of the Mount," is one of the names of the great goddess Belit, the wife of Bel.

The son of a soothsayer, however, who is not of pure origin, or imperfect in stature or measures of limbs, who is stare-eyed,[33] who has broken teeth, a mutilated finger, deficient in manhood, suffering from diseases of the skin, such a one is not allowed to observe the decisions of Shamash and Ramman (Adad), nor to approach the oracle of the service of divination. A secret verdict they do not reveal to him. Into the hand of such a one they [do not give] the staff of cedar, the favorite of the great gods."

Enme-duranki is called a king of Shippar, and he corresponds to Henoch of the Bible. Like the latter he is obviously a mythological, not a historical, person. Henoch lived 365 years and was the revealer of the secrets of the heavens.

The name Enme-duranki is explained by Schrader to mean, *Enme,* "the high priest," and *duranki* "of the place where heaven and earth meet," but it may be more correct to say, "the high priest of the earth and heaven secret." It is obviously not a name but a designation of his office. He is the high priest in possession of the mysteries of heaven and earth.

The name of Shippar is connected with the idea of written revelation for Shippar is derived from *Shipru,* which means a message, a writing, or a book, and corresponds to the Hebrew *Sepher.*[34] The Greek translation of Shippar is *Pantabiblia,*[35] which may be translated by "book of the All."

THE CHINESE SYSTEM OF DIVINATION.

We have restricted our enquiry into the nature of the ancient Hebrew oracle to the materials furnished by the Old Testament and the cuneiform inscriptions of Assyria

[33] i. e., squinting. [34] ספר [35] παντα βίβλια.

with their references to Sumerian traditions. But we hope to throw more light on them by a comparison with the Chinese system of divination which at any rate has helped us to form a clearer and more definite conception of the Urim and Thummim. It must be of very ancient origin, and may in its rudiment have been imported into China by the primitive settlers of the Yang-tze-Kiang Valley from their former homes in Eastern Asia, perhaps from Sumer, or some country affected by Sumerian civilization.

FUH'HI.

The Chinese too have a tablet of the mysteries of heaven and earth. They too have certain symbols, called in Chinese Yang and Yin, corresponding to the Urim and Thummim, and they too have oracles in which they attain similar results as in ancient Israel. We know that Fuh Hi, the mythical founder of Chinese civilization, carries in his hands a tablet inscribed with some mystic combination of Yang and Yin symbols, corresponding to the tablet of destiny. This tablet has gradually been worked out into a more complicated system of cosmic significance, and on

the very start of its further development we find the number twelve playing an analogously prominent part to that of the breastplate of the high priest in Jerusalem, only that the number twelve preserves a more primitive and wider range of interpretation.

A comparison of the Yang and Yin with the Urim and Thummim corroborates in my opinion the hypothesis that they must have been two sets of symbols forming a contrast of opposites. They may have been painted, the Urim white, and the Thummim black. That the Urim were of bright color is indicated by their name, "the shining ones," while the meaning of the Thummim by contrast must have been "the dark ones."

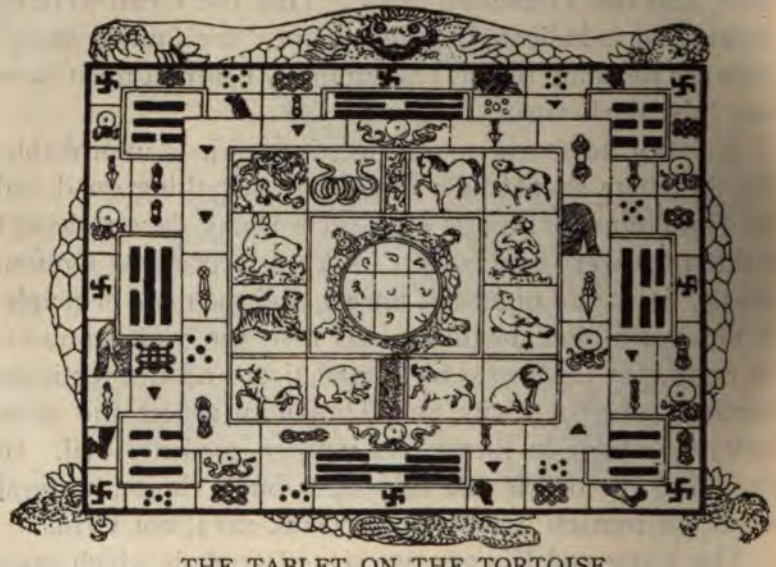
It is not necessary to assume, indeed it is improbable, that the Urim should have stood for everything good and the Thummim for things evil; all we may dare to assert is that they were contrasts. As Yang represents motion, heaven, light, odd numbers, unrest, and the male principle, so Yin stands for steadiness and rest, for even numbers, for earth, for darkness, for completion, and the feminine principle, and the Urim and Thummim reflect the same contrast and are in themselves neither good nor evil. In consulting the oracle one may have one's choice, as Saul selects for himself Thummim (1 Sam. xiv), not Urim.

The Yang and Yin are two sets of symbols which since the invention of the brush are represented as straight (—) and broken (--) lines, but in ancient times they were pictured as white (○) and black (●) disks, and the latter mode of representation indicates that the diviners may originally have employed bright and dark balls as pebbles.

In the Chinese system of divination there is used for the determination of the Yang and Yin a method of selecting them through a manipulation of sacred sticks, called the divination stalks, made of millet stems, which plant for this reason is deemed sacred, and is still grown upon the

tomb of Confucius. Though this method was already employed as early as in the days of Confucius who regards it as a hoary institution, it may be of a later date than the immigration of the first Chinese settlers, and yet we find in the Bible as well as in ancient Arabic folklore the use of arrows mentioned for a similar purpose.

Among the other instruments used in China for divination is a tablet which in more than one respect bears a resemblance to the table of Enmeduranki, the table of

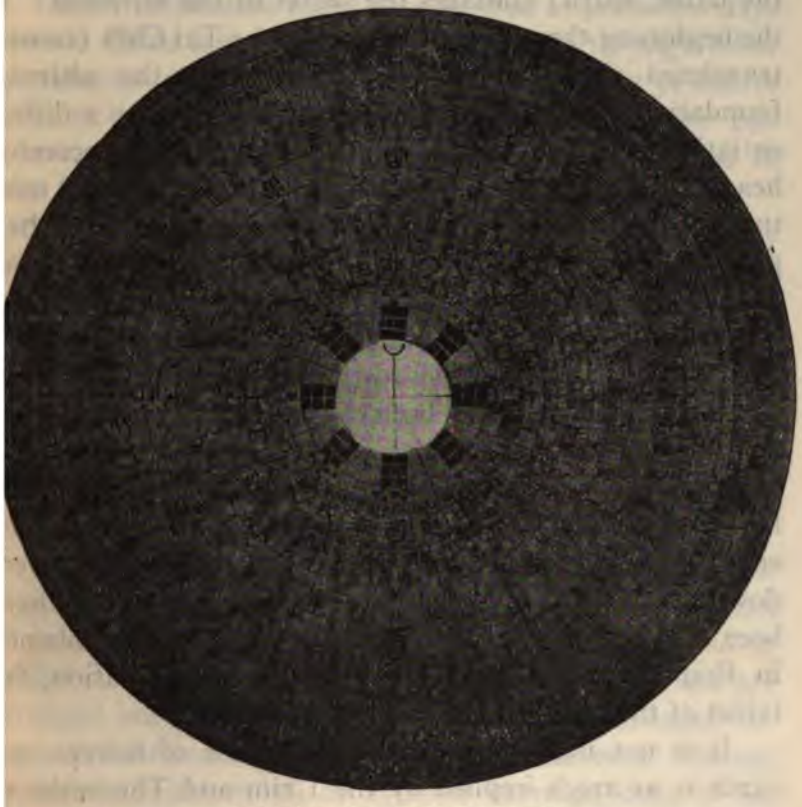


THE TABLET ON THE TORTOISE.

judgment on the breast of Kingu and of Marduk and also to the breastplate of the Hebrew high priest; and this table, which is mentioned in the most ancient documents, contains a systematic mode of grouping the symbols of Heaven and Earth, called Yang and Yin. It is attributed to Fuh Hi, the founder of Chinese civilization.

The tablet in the hands of Fuh Hi represents the world. The several combinations of Yang and Yin stand for the four quarters with their four intermediary directions. In

ts more complicated form as the tablet on the divination ortoise it shows also the duodenary cycle of the twelve nansions pictured in the twelve animals. They stand for verything that has a twelvefold relation, the twelve nonths, the twelve double hours, and generally a division



LO-PAN OR NET TABLET.
The original is in the possession of Prof. Fr. Hirth.

into twelve of the whole cosmic constitution. The tablet on the tortoise has finally been developed into an elaborate disk of symbols called the "Lo-pan" or "Net Tablet," because it has the appearance of a net, or rather a spider's

web. It is still used by the geomancers of China for divination.[36]

The Chinese claim that the system of the Yih (this theory of mutations among the Yang and Yin, the positive and negative principles, also called: the former, heaven, the latter, earth) contains the secret of the universe. In the beginning there was the absolute, the Tai Chih (mostly translated the Grand Limit, which means the ultimate foundation of all things) and creation begins by a differentiation of it into Yang and Yin, the former becoming heaven, the latter earth. All things that exist are but mixtures of the two, and all events that happen are due to their peculiar combinations, and so the Yih contains the quintessence of all wisdom and the key to all the mysteries of heaven and earth. The same claim is made in Babylon. There too it is firmly believed that all the sciences and all possible knowledge had been revealed in the beginning. Berosus tells us that Oannes (a form of the god Ea) had risen in the shape of a fish-man from the Erythræan sea; he dwelt among men teaching them all the arts and sciences during daytime, and, as the sun nightly sets, went down every evening in the western sea. It can only have been the gist of this same knowledge that was contained in Enmeduranki's tablet of spells, or of divination, the tablet of the mysteries of heaven and earth.

It is not impossible that the contrast of heaven and earth is as much implied by the Urim and Thummim as it is in the Chinese Yang and Yin, and if that be so the first verse of Genesis, "In the beginning God created heaven and earth," may originally have possessed a philosophical meaning which in time has been obliterated.

The wisdom that centered in the symbols of Yang and Yin has been incorporated in a book which is called *Yih*

[36] For further details of the Chinese method of divination see the author's pamphlet *Chinese Philosophy*, and his more extensive work *Chinese Thought* (Chicago: The Open Court Publishing Co.).

King, i. e., "the Book of Changes," and this book of changes contains definite answers which according to the composition of Yang and Yin elements, selected with reference to definite rules, gives definite answers to definite questions.

That a connection must have existed in primitive days between China and Babylon is well assured through other coincidences, such as the similarities of the most primitive script in both countries, in the arrangement of their calendars, their sexagenary numerical system, and also in some mythological and religious notions.

While our comparison of Chinese methods with the ancient Semitic oracle may give no light as to details, it is helpful to form an opinion as to the general nature of the Urim and Thummim, which in bygone ages played a part among the Israelites, corresponding to that still played by the Yang and Yin in China.

CONCLUSION.

All divination of primitive mankind is based upon the supposition that the world is regulated by law and that all existence forms a system that can be represented in symbols. The symbols possess a definite meaning and are arranged according to prescribed rules, the intention being to imitate in them the actual course of events. Having produced conditions in the symbols corresponding to the situation of the problem in question, the theory of divination assumes that the result will in either case be the same, and the soothsayer is assumed to be able to foretell the future.

Accordingly the nature of the tablet of Enme-duranki can only have been a system of symbols somehow representing the universe, and it is more than probable that the twelve signs of the zodiac played a prominent part in it.

For many reasons twelve was a sacred number and so it was but natural that this feature of the ancient tablet of destiny has been preserved in the breastplate of judgment worn by the high priest of Jerusalem, but in conformity with the general tendency of Judaism the cosmic significance of the twelve gems was replaced by a narrow nationalistic interpretation.

We will conclude with a comment of a general application, which, however, in our opinion will be helpful to folklorists who make a specialty of games. Not only all divination of primitive man is based upon cosmic considerations, but the ancient plays and games are also derived from the same source. Originally the games of children are acts of divination in which they try how they will fare in life. In their origin games are not mere pastime but either practicing or imitating religious ceremonies. An investigation into the nature of old games that have been handed down to us from prehistoric ages will most likely prove all of them to be schemes that symbolically represent the universe in which the player tries his luck and consults fate as to the outcome either of a definite enterprise or of his life in general.

EDITOR.

HE MOSAIC NAMES OF GOD, AND WHAT THEY DENOTE.

METHOD OF TRANSCRIPTION.

ı transcribing ancient Hebrew and its more recent vowels as accurately ssible into English letters and sounds for those who know the latter he following facts had better be stated:

The 22 letters of the Hebrew alphabet are all consonants, none of them s, not even the letter A, which is voweled with any Hebrew vowel as l. The evidence which I adduce of this fact is, that there is no word in ebrew consisting of but one letter, because if there were one it would ıad to be a vowel.

The earliest record of a system of voweling and correct reading of the ure was made in Babylon in the first half of the sixth century A. D. vidence of this is, that not an intimation of a name, or character of a is to be found in the vast literature of either the Jerusalem or the ɔnian Talmuds. There is reference there to certain points which are onally obligatory to be put over the letters of a certain few words in ɔoks of Moses which are written for ritual reading, but not for articu- purposes. What they really are for no one can tell us. But very an- hese point are, for they are attempted to be accounted for in the Siphri, mentary to Numbers, which antedates all the Talmuds. (See § 69 to ix. 9, 10.) The publication of the Talmuds in the written form was not earlier than the sixth century, and perhaps not earlier than the seventh.

The six letters of the Hebrew alphabet, B, G (hard), D, K, P, T, are mutes, (because, as Max Müller aptly said, you can not sing with can not close a syllable or a word. The reason is that the organ which either of these is pronounced must first be closed and then sud- opened, hence to pronounce another following consonant next to it, osing and opening would have to be repeated, and fluency of speech ıe ease of hearing would be hindered. These six mutes are therefore e of being aspirated, i. e., pronounced with their respective organ of ı somewhat opened, so that the breath is allowed to pass through the . We shall use the small *h* in connection with the respective capital to denote this aspiration, and shall give the corresponding sound in anscribed letter of the Hebrew alphabet.

The Hebrew has a few letters of double sound, but expressed with tter. However, in transcribing them, we shall use the English capital s doubled.

5. Avoiding refined niceties we shall transcribe Hebrew vowels in the following English vowel values: *a*, as in "far"; *o*, as in "not"; *ai*, as in "main"; *i*, as in "pin"; *ee*, as in "keen"; *e*, as in "get"; *ow*, as in "house"; and *oo*, as in "poor."

6. The Hebrew writes and reads from right to left, but in transcribing we shall write and read from left to right and place the vowels after capital consonants in small letters at the top.

7. The initial letter of the name of a Hebrew letter indicates its sound thus:

HEBREW FORM	NAME	ENGLISH TRANSCRIPTION	ENGLISH SOUND	REMARKS
א	Aleph	A	(See 1.)	It may sound like any vowel in 5.
בב	Baith	B	B	
ב	Vaith	Bh	V	One of the aspirable letters.
ג	Ghimel	G	G	Hard.
ג	Ghimel	G	G	Like *g* in the German *Tag*, which becomes our *y* in "day."
ד	Daleth	D	D	The aspirations of כ and ך are not minded.
דד	Dhaleth	D	D	Should sound like "th" in "with."
ה	Hai	H	H	
ו	Vov	V	V	Ancient Greek Digamma = s Gammas, *F*, one above the other, s × s = 6, the 6th in the Alphabet.
ז	Zain	Z	Z	Just the English, not the German *s*.
ח	HHeth	HH	HH	The nearest existing English sound to represent this letter with.
טט	Teth	TT	TT	The sound of this T is never changed.
י	Yod	I	Y	Consonant as in "Yes."
כ	Kaph	K	K	This K can be aspirated,
כ	Khaph	Kh	Kh	as in "Kherson" a Russian town. At the end of a word its shape is ך in modern Hebrew.
ל	Lamed	L	L	
מ	Mem	M	M	At the end of a word its shape is ם in modern Hebrew.
נ	Noon	N	N	At the end of a word its shape is ן.
ס	Samakh	S	S	This *S* sound is never changed.
עע	GHayen	GH	GH	A palatal and guttural sound combined.
פ	Peh	P	P	This letter can be aspirated as in כ.
פ	Phe	Ph	Ph	At the end of a word the shape is ף.
צ	TSadik	TS	TS	Like German *z*, not like English *z*. At the end of a word the shape is ץ.
ק	Kooph	Q	Q	This *Q* sound never changes.
ר	Raish	R	R	
שש	Shin	Sh	Sh	
ש	Sin	SS	SS	
ת	Tav	T	T	
ת	Thav	Th	Th	Like in "with."

BY birth, education, and religious conviction I was and am deeply interested in the destiny of the Jewish nation. The strange phenomenon, therefore, that the

Christ and Christianity, which are so undeniably of Jewish origin, should yet have been and are generally rejected by the Jews, engaged my attention ever since I recognized in Jesus of Nazareth Him of whom Moses and the prophets and Psalms so often speak. What was the efficient cause of that intense Jewish ecclesiastical animosity against Him whom Christians regard, and therefore worship, as the incarnate Son of God? Such a tremendous national event as the cruel crucifixion of the innocent Christ has proved itself to have been, could not have taken place without a previous preparation. Why then did the Jewish authorities cause the crucifixion of our Lord Jesus by the Roman authorities?. Events of such moment in history are pragmatic and not accidental. But was not this event in fulfilment of prophecy? Yes, but the X-rays with which prophecy penetrated the then thick veil of future ages, and photographically faithfully described that horrible, and world-changing event of the crucifixion would yet not have done so if it were not to take place. Prophecy, though it is anterior, is yet a consequence and not a cause of the event it describes. The prophecies of the fifty-second and fifty-third chapter of Isaiah were not the cause but the consequence of the unjust trial, condemnation, crucifixion and burial of Jesus the Christ of Jehovah, the God of Israel.

What then was the cause of that ecclesiastical rage against him? Some assume it was the new paths in the ritualistic practices which Jesus struck out, for instance in the observance of the Sabbath and in the washing of hands before meals. But at the time of Christ these were not as yet established laws, but rather matters of dispute among the differing rabbinical schools. And even if they had been then established laws, they would have been too inadequate in their breach to be the cause of the Jewish authorities bringing Jesus to the cross, and to have secured

his death by the Roman governor at the humiliating acknowledgment of having no king but Cæsar, thus going back on their pride of ages, which they expressed in their numerous daily benedictions that Jehovah was their God, their Father and their King.

The doctrine of the divine Sonship of the Christ was at the time of our Lord Jesus either not entertained at all by the Jewish ecclesiastical authorities, or it was relegated to the esoteric teachings of divine mysticism, the HaN-NiSTo RouTH,[1] "hidden things" of Deut. xxix. 28, and which are alluded to in Jewish post-Biblical literature, and some of which have come to us by the name of the Kabbalah. So entirely was the doctrine of the divine sonship of the human Christ repressed from the public teachings of those times, that the books of Ezekiel and Daniel in which a human being is represented in the one as the leading power in the throne of God, and as a Son of God in the other, were designed by the ecclesiastical authorities to be put out of the canon, and relegated among those books that were to be "concealed" from the public, the GNVooSiM,[2] from which word we have the translated word "Apocrypha," and to which *we* attach the additional meaning of "ungenuine."

But some ideas about the divine sonship of the Christ must have been entertained by the people. This is evident from what Matthew relates in his Gospel, xxii. 42-46. On one occasion when he met a number of Pharisees, Jesus asked them what they thought about the Christ as to whose Son He was. They promptly answered "David's." Then Jesus cited to them in refutation of their reply, the 110th Psalm, the title of which LDoViD[3] = By David, denotes that David was the author of it. There David says, that Jehovah (for whose name the Jews substitute the word AaDouNoI)[4] said unto my Lord AaDouNeeI,[5] "sit thou at

[1] הַנִּסְתָּרוֹת [2] גְּנוּזִים [3] לְדָוִד [4] אֲדֹנָי [5] אֲדֹנָי

my right hand until I put thine enemies as a footstool under thy feet." How then, asked Jesus, can he, the Christ, who was admitted by the Jews to be meant by that word AaDouNeeI, i. e., "my Lord,"—how then can He, the Christ, be the son of David, if David calls Him "my Lord"? For there was no question that it would be an indignity to a father to call his own son "my Lord." Then Matthew relates that the Pharisees were completely silenced, and dared not ask Him any more questions. They must have felt that Jesus struck the most vital point in dispute between them, viz., the divinity of the Christ. And in the passage which our Lord Jesus quoted, the difference there between Him and the Pharisees turned about the pronunciation of the word spelled ADNI,[6] which they pronounced AaDouNeeI,[7] meaning "my Lord," while he must have meant it to be pronounced AoDouNoI,[8] meaning "Milord," which word with this pronunciation is applied in the second Psalm to the Son of Jehovah.

For those who are not familiar with the Hebrew language, the important point made here by me will not be readily understood. To such, however, I would propound the question: How did our Lord Jesus Himself answer the question, which He proposed to the Jews? There can be no denial, that the Divine Sonship of the Christ was the vital point of the controversy between our Lord Jesus and His opponents, the Scribes, the Pharisees, and the Sadducees. We see this in the gratification of our Lord at Peter's confession (Matt. xvi. 16), "Thou art *the* Christ, *the* Son (not *a* Son) of the living God!" Then the Lord's declaration: "Blessed art thou Simon bar Jona, because flesh and blood has not revealed unto thee, but my Father who is in the Heavens. Moreover I say unto thee, that thou art Peter, but on this stone, *ἐπὶ ταύτῃ τῇ πέτρᾳ*, (not *ἐπὶ τούτῳ τῷ πέτρῳ*) I will build my congregation." Put-

[6] אדני [7] אֲדֹנָי [8] אֲדֹנָי

ing this in the Palestinian dialect of that time, it would have this paranomesia: PeTRo AaNT VeGHaL AaBh- [illegible] AeBhNeH KNeSeeIoH SHeLeeI.[9] We see it also in the "grand adjuration," the HHeReM HaGGoD- [illegible] of the high priest at the trial (Matt. xxvi. 63), "Are thou the Christ, the Son of God?" then our Lord's reply, "Thou hast said." Then declaring the amazing doctrine of the Incarnation he said: "Moreover (LeBhaD)[11] I tell you, [addressing the whole council] from now on ye shall see the *Son of man*" [i. e., the Christ as the Incarnation of the Son of God] sitting at the right hand of the Power," LeeIMeeIN HaGGBhooRoH etc.[12] This the high priest declared as blasphemy, which it would be if there were no Son of God, or better say *in* God, and no incarnation of that Son in a human form, BeN AoDoM.[13] But neither was this fatal blindness of the Jewish Rabbis and ecclesiastical authorities without an adequate antecedent cause. What was it? It may be put as a proposition to all I intend to say in this paper, that the monotheism maintained in Judaism from post-Biblical times on to this our own day, is not the monotheism of the Jewish "sacred books," KiTHBhai KVouDeSH.[14]

What then do these books teach about God? I answer, we can learn this from the names of God found in these books, in connection with other things which they say of God. Names in Hebrew are not arbitrary, meaningless, but there is much in a Hebrew name, for it denotes the character, or some event that happened, or some quality that it is desired to express in the person bearing the name. Hence the names of God which the author of any Old Testament book makes use of, give us legitimately a clue as to what that writer holds about God.

I have gone systematically through the books of Moses

[9] פִּיטְרָא אַבְנָא וְשַׁל אַבְנָא דְרָא אֲבָנָה קְנַסְיָה שְׁלִי [10] חֵרֶם הַגָּרוֹל [11] (לְבַר)
[12] כִּתְבֵי קוֹדֶשׁ [13] בֶּן אָדָם [14] לִי מִין הַגְּבוּרָה

and of Joshua, and the other books of the Old Testament in order to find out what their authors say of God. But on the present occasion time will not permit to review every passage in detail, and I must satisfy myself to call attention to the most salient points.

It will not be denied successfully, that the Hebrew language existed prior to the advent of Moses. Julius Fürst in his ZiKhRouVNouVTH LShouVN QouDeSh[15] = "Memoirs of the holy tongue" appended to his concordance of the Old Testament, dates the Hebrew language to the time of GHeBheR,[16] (Eber, Gen. x. 21, 24, 25,) the grandson of Shem. And this agrees well with the national name "Hebrew," GHiBhReeI.[17] At any rate Moses was not the inventor of the Hebrew language. Yet it will not be denied that he must have had a decided influence on the culture of that language during the latter part of his active life. Or, take even the lowest view of the lowest self-styled " high critics" of modern times, and assume that Moses is a mythical person, and that the books reputed as his work were the composition of some Exilic, or post-Exilic prophet, priest, fanatic, or erratic, and it will not be successfully denied, that whoever the author, compiler, or conglomerator be, he must have had an influence on the culture of the Hebrew language by virtue of that composition. And if so, then the question arises, how came he to use the name of God AeLouHeeIM[18] in the plural, "Gods," and with verbs in the singular number with but few exceptions? Whoever and whenever the books of Moses originated, he or they always used, for there always were, names of God in the singular number that could have been equally as well used as the plural AeLouHeeIM. This plural is evidently formed from the singular AeLouVHa;[19] and it would be begging the question to say that this AeLouVHa belongs to a later Hebrew,

[15] זִכְרוֹנוֹת לְשׁוֹן קֹדֶשׁ [16] עֵבֶר [17] עִבְרִי [18] אֱלֹהִים [19] אֱלוֹהַּ

for surely the plural of a noun would never originate before its singular form. Nor can the plural AeLouHeeIM[20] be derived from the monosyllabic AeL,[21] for its plural is Aai-LeeIM,[22] from which is derived the derisive AeLeeILeeIM,[23] i. e., "false gods, idols." The H, therefore, in AeLou-HeeIM[24] is evidence enough that the singular AeLouVHa[25] is a most primitive Hebrew word for the name of God.

In passing let me call attention to a remarkable cautiousness against error in the spelling of this word AeLou-VHa. In the fifty-six times that this name occurs in the Old Testament it is always, except twice, (viz. Deut. xxxii, 17, IiZBHHoo LaShaiDeeIM LouA AeLouHa,[26] "They sacrifice to Devils, not a God," and Daniel xi. 38, VLeAe-LouHa MoGHVooZeeIM GHaL KaNVou IKhaBaiD[27] = "And the God of Fortresses he will honor on his pedestal") spelled with a Vov, while in the many hundred times of the plural AeLouHeeIM[28] derived from this AeLouVHa[29] in the singular there is not a single instance of its being spelled with a Vov. Why? Because when spelled Ae-LouHa[30] the Hai[31] might have been taken, before the Hebrew vowel points were invented, as the feminine formative Hai,[32] with an o[33] sound preceding it, from the masculine AeL,[34] and thus a goddess, an AeLoH,[35] might have been thought to exist in the Hebrew faith. To prevent this possible error the spelling with a Vov[36] was introduced, and the word is spelled in what is grammatically called the *plene* form. The plural AeLouHeeIM[37] can not therefore be derived from AeL[38] directly, but from AeLouHa[39] indirectly. Why then did the author, authors, redactors, conglomerator or conglomerators of the Mosaic books use the plural but not the singular for the name of God, and

אֱלֹהִים[20] אֵל[21] אֱלִים[22] אֱלִילִים[23] אֱלֹהִים[24] אֱלֹהַּ[25]
לֵאלֹהַּ מְעוּזִּים עַל בֵּן יְבַבֵּר[27] אֱלֹהִים[28]
יִזְבְּחוּ לַשֵּׁדִים לֹא אֱלֹהַּ[26]
אֱלֹהַּ[29] אֱלֹהַּ[30] ה[31] ה[32] [33] אֵל[34] אֱלָה[35] [36]
אֱלֹהַּ[37] אֵל[38] אֱלֹהַּ[39]

with this plural, verbs in the singular? And this we find in the very first three words of the Mosaic Scriptures. "In [or 'at'] the [or 'a'] beginning Gods *He* created," not "they created"? Can such a glaring error, as a noun and its verb *not* agreeing in number be unintentional? For whatever else may not agree in this disagreeing world, a verb must agree with its noun in number and gender. Can this be a mere *usus loquendi*? Can this be without an adequate reason? Especially when in a few instances this same plural noun AᵉLᵒᵘHᵉᵉIM[40] *is* used with verbs in the plural? It would seem that nothing but preconceived notions can assume this in order to make it tally with these ideas. One of these is the notion that Moses or the Mosaic books teach an absolute, mathematical one-Godism, which is but a mere notion and not a truth. What this intentional, ungrammatical use of the plural noun AᵉLᵒᵘHᵉᵉIM = Gods, with verbs in the singular number, can and certainly does teach is this, that God, or Deity, is not an absolute mathematical unit, but such a plural unity that a verb in the singular can be used with his plural name AᵉLᵒᵘHᵉᵉIM = Gods. And in this sense it *is* a Hebrew *usus loquendi*. There are some Hebrew nouns used exclusively in the plural form, some of which are used with verbs in the singular, while others of the same kind are used with verbs in the plural only: HHᵃI-Iᵉᵉ IM[41] = "lives" = "life," is always used with plural verbs, except perhaps once, in Ps. lxiv. 2, MⁱPᵃHHᵃD AᵒᵘVIᵃⁱBh TⁱTSᵒᵘR HHᵃIIᵒI,[42] "from the fear of the enemy Thou wilt preserve my life," if TTSR[43] should be voweled rather TᵃⁱTSᵃR[44] from IᵒTSᵒᵘR[45] = "to distress," and not from NᵒTSᵒᵘR[46] = "to preserve," which is in better parallelism, with PᵃHHᵃD[47] = "fear." Shᵒ-MᵃIⁱM[48] = "heavens" is always in the plural. MᵃIᵉᵉM[49]

[40] אֱלֹהִים [41] חַיִּים [42] מִפַּחַד אוֹיֵב תִּצֹּר חַיָּי [43] תצר [44] תְּצַר
[45] יָצַר [46] נָצַר [47] פַּחַד [48] שָׁמַיִם [49] מַיִם

= "waters" is always with a plural verb except eight times of the four hundred and forty-six times that the word occurs in the Old Testament, where it occurs with other verbs in the singular number. RaHHMeeIM[50] = "mercies" = "mercy," is so far as I can find always with verbs in the plural number. SRoPheeIM[51] and TRoPheeIM[52] are always with plural verbs. Most pertinent to the subject under consideration is the special plural or dual proper name MiTSRaIiM.[53]

This name of the land, in the dual form because it appertains to upper and lower Egypt, is also used to denote the inhabitants of Egypt who otherwise are spoken of as MiTSReeIM[54] = "Egyptians," and in the singular MiTSReeI[55] = Egyptian. The dual plural proper name MiTSRaIiM when applied to the inhabitants of Egypt is used both with verbs in the plural and singular number. Thus Gen. xlv. 2, "And he put forth his voice, and they, MiTSRaIiM (Egyptians), heard it." Gen. xlvii, "And all MiTSRaIiM (Egyptians) came to Joseph." Ex. i. 13, "And Egyptians (MiTSRaIiM) lamented [for] him." Ex. iii. 9, "The oppression which Egyptians (MiTSRaIiM) oppress them." Ex. vi. 5, "....the groanings of the Bne Israel, whom Egyptians (MiTSRaIiM) enslave." Ex. vii. 5, "And MiTSRaIiM (Egyptians) shall know." In all these passages MiTSRaIiM) might have been voweled MiTSRiM,[56] and the agreement of the plural noun with the plural verb would have been perfectly correct. But we have again Ex. xiv. 10, "....and behold MiTSRaIiM (Egyptians) NouSaiGHa[57] = *he* travels after them." Again Ex. xiv. 25, "And MiTSRaIiM (Egyptians) *he* said (VaIIAouMeR)[58] AoNVooSo[59] = "*I* will flee before etc." Here the common version is very wrong in rendering AoNVooSoH in the plural, "Let us flee," following as usual the

מַצְרַיִם[53] חֹרָשִׁים[52] שׁוֹנְאִים[51] חֲמֹרִים[50]

אָנוּסָה[59] נִרְאֹתִי[58] נֹסֵעַ[57] מִצְרַיִם[56] מִצְרִי[55] מִצְרִים[54]

LXX which have here *φύγωμεν*. This is one of those numerous instances where this version professes to be a "*translation from the original*" and is not so, but a second-hand translation from a prejudiced translation. Again Jer. xlvi. 8, MiTSRaIiM (Egyptians) KaIAoR IaGHaLeH,[60] "*he* shall go up like a river." Here the people might be called by the name of the land, were it not that MiTSRaIiM[61] is feminine, as e. g. in Joel iv. 19, "MiTSRaIiM[62] *he* shall be waste," while IaGHaLeH[63] above is masculine. Again Ps. cv. 38, "MiTSRaIiM SSoMaHH[64] (Egyptians) *e* was glad when they went."

Now in all *these* places vowel point instead of MiTSRaIiM, Egyptians in the dual number, MiTSRiM,[65] Egyptians in the plural number, and the disagreement between plural nouns with singular verbs becomes grossly apparent. Yet it is done because the word MiTSRaIiM in the dual plural stands for the collection of the plural persons of the nation Egypt, who can logically and linguistically be regarded as one person and therefore be spoken of in connection of verbs in the singular number. And just so the case may be with the word AeLouHeeIM[66] although it is an indubitable plural, yet because the persons of this plural have an intimate bond of union they can logically and linguistically be spoken of in connection with verbs in the singular number.

If now what I have said up to this point be true, and I think it is, then the old contention between the non-Christian and the Christian Jew must therefore be not merely whether AeLouHeeIM is, or is not, a *pluralis excellentiae*, a sort of an editorial "wegotism," nor why it is used with verbs in the plural number in comparatively few places, but the contention must be as to why this plural word AeLouHeeIM is used in hundreds of places with verbs in

[60] מִצְרַיִם נָיְאֹר יַעֲלֶה [61] מִצְרַיִם [62] שְׁמָמָה תִּהְיֶה [63] יַעֲלֶה

[64] מִצְרַיִם שָׂמַח [65] מִצְרַיִם [66] אֱלֹהִים

the singular? The un-Christian Jew, whether orthodox or heterodox, cannot explain this on any grammatical or rhetorical grounds. The truth that AeLouHeeIM is a plural of abstraction will not help the question, for a plural of abstraction would not be used if the object from which the abstraction is made were not a plurality.

At this point I want to ask my attentive readers what bearing think ye, has *my* contention on the very confidently talked-of theory of an Elohistic redactor of some portions of the, at least reputed, writings of Moses? What might have been his trend and bent of mind? And may not the very much denied Moses have been himself that Elohist, who wanted to teach the unity of persons in the plurality of the Godhead? We shall see about this further on.

What I wish to touch upon next is the equally confidently talked-of Jehovistic redactor of some parts of the at least reputed writings of Moses. There can be no doubt, according to my showing above, that the intention of Moses or of the hypothetical pious fraud of a redactor of his reputed writings, was to teach a plurality in the unity of Deity. What monotheism then did the true, or pseudo, Moses teach? An unprejudiced reader of the Mosaic writings, one for instance who would come down from the moon, or perhaps more likely from Mars, such a one would certainly come to the conclusion that the writings teach a mono-Jehovism. The meaning of Deut. vi. 4, ShMaGH IiSRoAeL IeHVeH AeLouHaiNVoo IeHVeH AeHHoD[67] is, "Hear, O Israel, our Jehovah of Elohim (Gods, Deity) is one Jehovah," i. e., there are no two Jehovahs in Deity. And so too is the meaning in the BiLTi[68] = *absque* = "without," and BiLGHoDaI[69] = *Sine* = "without" in connection with AaiN AeLouHeeIM,[70]

שְׁמַע יִשְׂרָאֵל יְהוָה אֱלֹהֵינוּ יְהוָה אֶחָד ׃ [67] בלתי [68] בלעדי [69] אין אלהים [70]

'without IeHVeH[71] there is no Deity," not "besides" = *raeter*, so often met with in the Prophets.

In the first record of the creation, in Gen. i. 1 to ii. 4, he Creator is AeLouHeeIM = "Gods." Of these the ecord mentions one as the RooVaHH AeLouHeeIM[72] = Spirit of Gods" (i. 2). In the creation of man this record ays that "AeLouHeeIM (= Gods) He said: Let *us* make n AoDoM[73] in our own image, like our likeness." The ord AoDoM[74] is evidently the masculine form from which he feminine AaDoMoH[75] = "earth" is formed as a word, nd is in the singular number. Then this record says: And AeLouHeeIM[76] (= Gods) *He* created the Adam in His image, [i. e.] in the [one] image of AeLouHeeIM = Gods) created He him: male and female created He nem" (i. 26, 27). Adam's female's name was not derived rom his name, but both the male and the female were poken of in this record as AoDoM.[77] This is more distinctly stated in the record of v. 2, "Male and female reated He them, and blessed them, and He called them dam in the day of their being created." So we see here gain, that a plurality of persons can be called by a name n the singular number, just as we have seen before in the ase of the plural name AeLouHeeIM[78] being used with erbs in the singular number. Nevertheless the difficulty ere of leaving the human female without a name, or with masculine one is not as easily overcome as in the case f AeLouHeeIM, which has its analogy in the plural name MiTSRaIiM,[79] being also construed with verbs in the singular. Moreover this linguistic difficulty is intimately connected with the theological difficulty, that this record implies that there is a female in the plural Godhead. And besides these linguistic and theological difficulties there is yet the greatest cosmic difficulty with this first record.

יְהוָה [71] רוּחַ אֱלֹהִים [72] אָדָם [73] אָדָם [74] אֲדָמָה [75]

אֱלֹהִים [76] אָדָם [77] אֱלֹהִים [78] מִצְרַיִם [79]

According to it everything in this world of ours is good and very good, yet we find in it toil, sorrow, pain, misery and death. Whence came all these? The deponent of this first record says not! However, our Elohist Moses solves for us all these difficulties with a supplementary record, which extends from Gen. ii. 4 to the end of chapter iii. And this supplementary record does *not* contradict the preceding one, but only supplements it.

[It is said by certain critics, that Gen. i. 11, 12, which speaks of vegetable production contradicts ii. 5, 6, which says that there was no vegetation at the creation. This contention is the result of a misconception, which in turn is the result of a mistranslation. Verses 5 and 6, of chapter ii, should be rendered thus: "The following are the events of the heavens and the earth at their being created, in the day of Jehovah of Elohim's making earth and heaven, and before any fine grass of the field had come to be in the earth, and before any herb of the field had sprouted, for Jehovah of Elohim had not yet caused to rain upon the earth, and an Adam there was none to work the soil, [i. e., by irrigation]. But a vapor would ascend from the earth, [i. e., from the places where there were moisture and water] and would cause all the face of the soil to drink it up." So this record is merely a further explanation of how vegetation came about after the dry land, the IaBoSHoH,[80] appeared out of the waters, which gathered into one place. Another contradiction is claimed to exist between i. 20-25, which speaks of the creation of the land animals *before* the creation of man, and ii. 19 where it says that animals were created *after* man was created. This contention is simply a piece of ignorance; the VaIiTSeR[81] of the latter verse does not mean at all "and He created" but "and He gathered," from TSoRouR[82] = "to gather," hence VaIiTSeR[83] with one Iod, and not like VaIIiTSeR[84]

[80] יִפְשֶׁה [81] וַיִּצֶר [82] צָרַר [83] ויצר [84] וַיִּיצֶר

in verse 7 with two Iods, where it *does* mean "He created," from IºTSºuR[85] = "to create"].

The Deity who is brought to our reverent notice in this record as the actor of wonderful deeds is not AᵉLºuHᵉᵉIM, but IᵉHVᵉH AᵉLºuHᵉᵉIM,[86] and in subsequent scriptures this appellation becomes the most solemn one. The natural and logical meaning of the two words in the English language is "Jehovah of Gods," and so in Joshua xxii. 22 the tribes of Reuben, Gad and part of Manassah are recorded to have so understood it by their adjuration AᵉL AᵉLºu-HᵉᵉIM IᵉHVᵉH[87] = "God of Gods Jehovah"! The name IᵉHVᵉH is treated throughout the Old Testament Hebrew, (and this is all of the pure Hebrew we have,) as a proper name, for (*a*) it never has the definite article before it, and (*b*) it has never the pronominal suffixes attached to the end of it. Those two marks distinguish it from the divine names AᵉL, AᵉLºuVHᵃ and AᵉLºuHᵉᵉIM,[89] which are not proper, but appellative names. And inasmuch as the rule in Hebrew Old Testament onomastics is that a person bear and be named by only one name, therefore this double or counterpart must be regarded as being in the constructive genitive case, namely, Jehovah of Elohim, or Gods. But Jewish superstition—not Hebrew, for there is no superstition in the Hebrew Scriptures—Jewish superstition starting, most probably, with a laudable reverence for the name of Jehovah, ended with a total suppression of that name, of which the bearer of it said: "This is my name forever, and this is my memorial for generation and generation. (Ex. iii. 15.) Instead of IᵉHVᵉH the Jews say AᵃDºuNºI.[90] And the Creator, whose is whatever is in the universe by virtue of His and only His creative power, is denied that power by a superstitious ignorance

[85] יָצַר [86] יְהוָה אֱלֹהִים [87] אֵל אֱלֹהִים יְהוָה [88] אֱלֹוהַּ
[89] אֱלֹהִים [90] אֲדֹנָי

that calls Him by the title "Lord," which denotes mere *acquired* possession.

This degenerated reverence for the name of the Creating Father of all, together with a false monotheism, became perpetuated by the Jewish Greek translation of the Old Testament, the so-called Septuagint, where IeVHeH AeLouHeeIM[91] is rendered *Κύριος ὁ θεός*. And this Jewish traditional superstition has become and is the property of all Christendom! But this is not all. A similar superstitious tradition inherited by Christendom from post-Biblical Rabbinism, is the translation of AaDouNoI IeHVeH[92], which the Jews pronounce AaDouNoI AeLouHeeIM[93] and which Christians following them translate "Lord God," while the true meaning of it is: "Milord of Jehovah."

Let me give here the results of my studies as to the meaning of these sacred names. I have already given the inevitable meaning of AeLouHeeIM as a plural.

The meaning of the sacred name IeHVeH, according to Mosaic narrative in Exodus iii, was not known till Moses, to whom Jehovah Himself explained it, although the personal Deity and the name was known before to the Hebrew patriarchs as far back as Seth and Enoush. The explanation came about in the following manner (verse 11): Moses said to *the* Deity HoAeLouHeeIM that spake to him from the burning thorn-bush: "Who am I that I should go to Pharaoh, and that I should bring forth the children of Israel from Egypt?" (verse 12.) And He (the Deity) said: "For I will come to be with thee, and this be for thee the sign that I have sent thee, when thou shalt have brought forth the people from Egypt ye shall worship *the* Deity AeTh HoAeLouHeeIM[94] by his mountain [otherwise an unlikely thing, for it, Horeb, is out of the road to Palestine]. (Verse 13) And Moses said to the

יְהוָה אֱלֹהִים [95] אֲדֹנָי יְהוָה [92] אֲדֹנָי אֱלֹהִים [93] אֶת הָאֱלֹהִים [94]

Deity HºAᵉLᵒᵘHᵉᵉIM, "Behold I am coming to the children of Israel, and have said to them the Deity of your ancestors has sent me unto you, and they shall have said to me: 'What is His name?' What shall I say to them?" And Deity = AᵉLᵒᵘHᵉᵉIM He said to Moses: "I will become that I will become." And He said: "This shalt thou say to the children of Israel: 'I shall become has sent me unto you.'" (15) And Deity moreover said to Moses: "Thus shalt thou say to the children of Israel: 'Jehovah of the Deity AᵉLᵒᵘHᵉᵉIM of Abraham, of the Deity of Isaac, of the Deity of Jacob sent me unto you'! This is my name forever, and this is my memorial for generation and generation." The meaning, therefore, of IᵉHVᵉH is AᵉHIᵉH AᵃSheR AᵉHIᵉH[95] = "I shall become that I shall become," not " I am that I am," for the Hebrew language has no word that corresponds to our verb "to be," and where it is needed it is simply implied and not expressed, and therefore you find it in your English Common Version in italics. And when you do find it there in common print (Roman) it must be rendered from the original Hebrew "to become," for pray tell me what comfort would it have brought to the toiling Hebrew slaves of Egypt to be told that "The I am" sent a message to them? They would have said there was no assurance in that name that He can or will do anything for *us*. And how different when the name of the message-sender is "I shall become that I shall become"! That means that he will become whatever they will need, their leader, their Redeemer, their defender, their provider. Or take an example of a later age of the Hebrew language as to the verb HºIºH[96] and its meaning. Take Isaiah lxvi. 1, 2: "Thus saith Jehovah, the heavens my throne and the earth footstool of my feet; which a house that ye would build for me? And where a place of my rest? And all these things my hand hath

[95] אֶהְיֶה אֲשֶׁר אֶהְיֶה. יְהוָה [96] הָיָה

made, and they all became; thus the oracles of Jehovah." Put instead of "became," "have been" as you have it in the common version, and the force of the argument is gone, for if all these *have been*, then he needed not to have made them. The verb HºIºH occurs about 3354 times in the Old Testament and of these only eighteen times in the passive NⁱHIᵉH.[97] Take your English concordance and look for the word "become" in the Old Testament and except in Deut. xxvii. 9, where it is in Hebrew NⁱHIᵉH, the Hebrew is HºIºH. I know that this idea about the Hebrew verb HºIºH is comparatively new. I grasped it, I think, a short time before Heinrich Ewald's grammar, seventh edition, came to my hands, and I was glad to have such an authority. (See also Dr. Ernst Meier, *Hebr. Wurzelwörterbuch, s. v.* HºIºH, p. 80: "Die Hebräer haben nicht einmal ein Wort was den Begriff des Seins streng ausdrückt.") And this is an immense truth, reaching far into the documents from which and in which we have our Christian faith. It makes one of the steps of the liberation of the study of the Hebrew language from the swaddling clothes in which Rabbi David Kimchi first swaddled it, and in which Rabbi Elijahoo Bahhur (Elias Levita) presented it to the reformers of the sixteenth century, and from which we have yet to be emancipated. It seems that the Hebrews who formed their language repudiated the idea that anything can exist *per se*, but all has to become, hence they had no need of a verb "to be." The sacred name IᵉHVᵉH means, therefore, "He shall Become," the second Iod in the third person fut. IⁱHIᵉH becoming changed into the VºV[98] of the infinitive Hº-VºuH.[99] And notice that the name of Himself which He gives us and commands us to know and remember Him by implies that He does not give it to Himself but it is given by another than Himself, and does not mean "I

[97] נִהְיָה [98] ו׳ [99] הוה

shall become," but "*He* shall become." And it implies that He was in all that humanly is called past, for He is to become in the human future, not merely to begin to be in that future, but become whatever the creatures He made will need Him to become.—Ah, my friends! This is the ShᵉM HᵃMMPhᵒᵘRᵒSh,[100] the Tetragamaton, of which some people speak with ignorant awe and superstitious worship, while there is here a *λογική λατρεία* (Rom. xii. 1), a reasonable intelligent worship.

In this connection I must mention the objection which some critics make against the idea that the patriarchs before Moses knew at all of Jehovah because the record in Ex. vi. 3 says, "And I appeared unto Abraham, unto Isaac and unto Jacob by God ShᵃDᵃⁱI;[101] but by my name IᵉHVᵉH I became not known to them." The objection rests on the word NᵒᵘVDᵃGHTⁱI,[102] which is in the passive form (Niphal) from the active (Kal) IᵒDᵃGH.[103] But this passive form is here a reflexive. This is analogous to the passive and middle voices in the Greek language, whose grammatical structure is so much more elaborate than the Hebrew. Similar reflexives in the form of passives are the NⁱDBᵃR[104] in Mal. iii. 16, Ezek. xxxiii. 30 and Ps. cxix. 23. So too are the passive participles RᵃHHVᵒᵒM and HHᵃNVᵒᵒN,[105] the last in Ex. xxii. 26, and both in xxxiv. 6, and often. Also the passive NⁱSh-BᵃGH,[106] invariably for "he swore," hence only reflexive, "he adjured himself."

A similar superstitious tradition which "makes the words of God of none effect" like the threefold false rendering of IᵉHVᵉH AᵉLᵒᵘHᵉᵉIM with the words "Lord God," is the post-Biblical Rabbinical pronunciation of AᵃDᵒᵘNᵒI IᵉHVᵉH with AᵃDᵒᵘNᵒI AᵉLᵒᵘHᵉᵉIM. This false pronunciation was inherited from the Jews by all

[100] שֵׁם הַמְּפֹרָשׁ [101] שַׁדַּי [102] נוֹדַעְתִּי [103] יָדַע [104] נִדְבָּר

[105] רַחוּם and חַנּוּן [106] נִשְׁבַּע

Christendom, and you perpetuate it by translating it "Lord God," while you should render it "Milord of Jehovah"!

The first instance where we meet with this compound name of God is in the theophany which Abram had, recorded in Gen. xv. 2. Jehovah said to him, "Fear not, Abram, I am thy shield, thy reward is very great," (SKh^{o}RKh^{o} H^{a}RB^{e}H MA^{ou}D[107]), not "I am thy great reward." And Abram said, "A^{a}D^{ou}N^{o}I I^{e}HV^{e}H (= Milord of I^{e}HV^{e}H) what wouldst thou give me? etc., etc." And again in verse 8, "A^{a}D^{ou}N^{o}I I^{e}HV^{e}H by what shall I know that I will inherit it?" Then again in the theophany of the three men, chap. xviii, Abram addresses Jehovah with A^{a}D^{ou}N^{o}I alone. My impression is also, that neither Abraham nor Moses, when they had a theophany, have addressed Jehovah by that name directly, but always either coupled with prefixing A^{a}D^{ou}N^{o}I, or with it itself. Different from this is the address in prayer. This distinction may prove of great importance to Biblical exegesis and Christian doctrine. For the question arises: How can a theophany be reconciled with the declaration of Jehovah to Moses, "Thou canst not see my face, for the Adam could not see me and live," (Ex. xxxiii. 20) and yet in the same chapter (verse 11) it is said: "And Jehovah would speak to Moses face to face as a mortal man (A^{ee}lSh[108]) would speak to his friend." And again in Num. xii. 6, 7, 8, when Jehovah chided Aaron, and chastised Miriam for their maladversion against Moses, He said, comparing his intercourse with other prophets, with the intercourse He had with Moses: "Not so is my servant Moses: in all my house is he a trusted one. Mouth to mouth I would speak to him, (B^{ou}V)* and a visibleness (V^{oo}M^{a}RA^{e}H)[109] is there, and not with riddles, and the figure (TM^{oo}N^{a}TH)[110] of I^{e}HV^{e}H he would look at." Has Jehovah a figure? It would be exegetically very un—

[107] שֻׁכָּרְךָ הַרְבֵּה מְאֹד [108] אִישׁ [109] וּמַרְאֶה [110] תְּמוּנַת

scientific to fall back with this difficulty upon the present fashionable convenient theories of different "relators" and "redactors" of this, that, and the other part of the polychromic Penta-, or Hexateuch. If you identify the person of IeHVeH with that of AaDouNoI and translate these two names as they stand together, as though they were in apposition, then the difficulty referred to is insurmountable. But remembering that the ancient Hebrew never gives to one person more than *one* name, and recognizing the evident distinction between these two different names, and that they can not, therefore, be in apposition, but in the constructive genitive case, if you will translate AaDou-NoI IeHVeH "Milord of Jehovah," you will then see the harmony of those very Scriptures which some people have torn to pieces and assigned the pieces to different and differing persons and ages,—you will see them given from one Shepherd, ay, for His sheep that know His voice.

But first of all, (*a*) What is the meaning of AaDouNoI? and (*b*) How does it differ from AaDouNeeI? The consonants are the same, the vowel points alone differ. It would be exegetically unscientific to accord implicit authority to the great and small Massorahs in their pointing or voweling of this word ADNI[111] one way here and another way there throughout the Old Testament. I have previously called attention to our Lord's disproving the correctness of the massoretic pointing of these four letters in Psalm cx (see pp. 392 ff.). At the same time I would be the last on earth to disparage the invaluable services of the Massorahs. All I contend for is the old rule of literary freedom: "*non jurare in verbo magistri.*" What then (*a*) is the meaning of AaDouNoI, and (*b*) how does it differ from AaDouNeeI? This last is certainly from the noun AaDoVN[112] = "Lord" with the first person of the possessive pronoun, and means, therefore, "My Lord." This

אדני 111 אדון 112

English word is a corruption of the Anglo-Saxon *Hlaf-weard,* i. e., "keeper of the loaf." This is far from the idea of Creator, or Eternal Being. To this word AaDou-NeeI no pronouns are suffixed, but to the same consonants when pointed AaDouNoI we find all possessive pronouns affixed, proving it, therefore, to be an appellative name, treated linguistically in some respects like the divine appellative name AeLouHeeIM. Similar, too, this is to the now quaint usage of the English "My Milord, thy, his, her Milord, or lords." The first instance of this compound divine name in the Old Testament is in the case of Abram (Gen. xv. 2, 8). Abram says to a vision of Jehovah speaking to him "AaDouNoI IeHVeH, What canst Thou give me, etc., etc.?" and again "AaDouNoI IeHVeH by what shall I know that I will inherit it?" Elsewhere Abram addresses Jehovah with AaDouNoI alone. (Why is there not a theory of Adonaists?) Now keep in mind clearly that this AaDouNoI is a human title applied to God, and that in its meaning it refers to *acquired* possession, that it differs, therefore, in meaning from the names AeLouHeeIM and Jehovah which are applied to the Creator, then ask yourself what could Abram have meant by putting these two names together? Or, take even the basest views of the highly destructive critics, and grant for the sake of argument, that this record about Abram and Jehovah is a mere myth that never really took place. But surely the record did not write itself, what then did that mythograph mean by putting this double name in the mouth of Abram? Take in the situation: Abram, the old Aramic sheik, had just returned from a brilliant military expedition, in which, with his three hundred and eighteen "initiates" (HHaNeeIKhoIV)[113] he pursued a number of invading kings with their armies, who went off with the booty of the defeated kings of Sodom and Gomorrah, his

[113] חֲנִיכָיו

neighbors. On his way back with that booty the king of Sodom went out to meet him, and with the king came also Melchizedek, king of Sholem, who was at the same time, it is said, priest to the High God. This king and priest saluted Abram with bread and wine in token of proffered covenant and friendship. Now listen to their theological talk. Melchizedek blesses Abram and says: "Blessed be Abram to High God, purchaser of heavens and earth. And blessed be High God who unshielded thine enemies with thy hand." Upon this Abram gives the king-priest the tenth of all the booty except the recaptured persons. Abram refuses to accept, and solemnly swears saying: "I cause my hand to be lifted up to Jehovah the High God purchaser of heavens and earth, if I take anything, etc., etc." Abram makes here the pointed confession in the presence of the priest to High God, that to him, (Abram) this High God is Jehovah, whom they say to be the purchaser of heavens and earth. I say *they*, not Abram, for in all the subsequent history of Abram, and even of all his posterity there is rarely to be found that they regard the High God Jehovah as purchaser but almost always as maker of heavens and earth and all there is in them. But brilliant as this exploit of Abram was, he evidently feared an attack of the same kings he defeated. For Jehovah appears to him in a vision, telling him not to fear, for his (Abram's) reward is very great. Then Abram says to Jehovah, "AᵃDᵒᵘNᵒI IᵉHVᵉH what canst Thou give me, while I am childless," etc., etc. Then follows the wonderful covenant between Abram and Jehovah, which was to be sealed in the body by Abram and all his posterity. What could this juxtaposition of a name denoting an obtainer or acquirer, to a name applied to the Creator, only mean? Can it mean anything else, but that together with Jehovah there is also another Deity, who is an obtainer or acquirer of heaven and earth? This became a mystery of many

subsequent ages. This obtainer appears in the long and eventful history of the Abrahamic posterity as the worker (MaLAoKh,[114] from MLoKhoH[115] = "work," not from the hypothetical LoAaKh[116]) of Jehovah. He is an intermediating Deity between Jehovah and His people. This double appellation, AaDouNoI IeHVeH is very rare in the early part of the Old Testament, while AaDouNoI alone is very frequent. The double is found once in Joshua vii, 7, twice in Judges, vi. 22, xvi. 28, thrice in 2 Samuel vii, 18, 19, 20, twice in one Psalm, lxxi. 5, 16 (evidently a Davidic Psalm), five times in Isaiah, xxviii. 22; l. 7, 9; lxv. 13, 15 (very significantly Christian), once in Jeremiah, xliv. 26, where the prophet in the name of Jehovah calls it ShMeeI HaGGoDVouL = "my great name." Then we meet it innumerable times in Ezekiel and the minor prophets. The mystery of that name, which cannot be rendered grammatically any other way than "Milord of Jehovah," does not become cleared up as to who that person AaDouNoI is till we read of him in the second Psalm. And if this untitled Psalm is an Exilic, or post-Exilic one, it is one more evidence of how much the Jews learned about the true God and His Christ in that short exile, apart from their radically unlearning there their old hankering after the worship of idols. Let us read together this second Psalm:

1. "Why raged the peoples, and nations meditated vanity?

2. "Together stood themselves up Kings of the earth, and secretaries consulted, against Jehovah and His anointed.

3. "Let us remove *their* [Jehovah's and His Anointed's] bands, and let us throw away from us their ropes.

4. "He that sitteth in the heavens will laugh, [who is he?] Milord AaDouNoI will deride them. [Compare this with Isaiah lxv. 13]

[114] מְלָאכָה [115] מְלָאכָה [116] יאך

5. "When He [Milord] would speak to them in His anger He would overwhelm them.

6. As for me (A^{a}D^{ou}N^{o}I) I have libated my King [i. e., poured out the royal dedicatory libation] upon Zion my holy mount. I (A^{a}D^{ou}N^{o}I) will declare the decree Jehovah said to me: 'Thou (A^{a}D^{ou}N^{o}I) art my son, this day I (I^{e}HV^{e}H) have begotten thee."

You see the mystery is cleared up; A^{a}D^{ou}N^{o}I is the son of I^{e}HV^{e}H the Father; He is His Son from eternity but is born in time, and as a time-born individual, He has to ask. Therefore:

8. "Ask of Me (I^{e}HV^{e}H) and I will give peoples as thine inheritance [i. e., inalienable possession, according to the law of Jubilee], and thy stronghold ends of earth.

9. "Thou wilt pasture them (T^{i}RGH^{ai}M), (com. Rev. ii. 27: *Καὶ ποιμανεῖ αὐτοὺς ἐν ῥάβδῳ σιδηρᾷ*) with a rod of iron; like a potter's vessel thou shalt break and scatter them.

10. "And now Kings!

11. "Serve ye Jehovah with awe, and rejoice tremblingly.

12. "Kiss *the* son [B^{a}R, a noun that has no plural] lest He (I^{e}HV^{e}H) become angry and ye lose a way [for you have to go back to Him, but how?]. For if His anger kindle even but a little—blessed are all they, who trust for protection in Him, the Son."

Further comment is unnecessary, adoration of this revealed mystery is in place.

Finally let me sum up:

1. A^{e}L^{ou}H^{ee}IM, the plural of A^{e}L^{ou}VH^{a}, shows by the prevalent use of the verbs in singular with it, that it denotes a unity in plurality. H^{o}A^{e}L^{ou}H^{ee}IM refers to I^{e}HV^{e}H.

2. I^{e}HV^{e}H A^{e}L^{ou}H^{ee}IM means "Jehovah of Elohim," and to translate it "Lord God" is a threefold error: (*a*)

Gives the Creator an inferior title, (*b*) makes a singular of a plural, (*c*) makes an apposition of a constructive case.

3. $I^{e}HV^{e}H$ is the name of the Father, whose son is $A^{a}D^{ou}N^{o}I$ = "Milord," and therefore $A^{a}D^{ou}N^{o}I$ $I^{e}HV^{e}H$ must be rendered "Milord of Jehovah."

4. The inevitable bearing these linguistic restorations must have upon the theories of Jehovist and Elohist.

5. The Jews pray to $A^{a}D^{ou}N^{o}I$ the Son, yet they do not know Him; how long shall they remain in ignorance?

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A BRIEF HISTORY OF EARLY CHINESE PHILOSOPHY

INTRODUCTION.

A TOLERABLY authentic history of Chinese civilization dates back as early as three thousand years before the Christian era, when the Three Rulers[1] and the Five Emperors[2] began to govern well-settled communities along the Yellow River. The Shu King,[3] one of the oldest books extant in China, contains among others some important documents issued by Yao and Shun,[4] whose imperial reigns flourished presumably in the twenty-fourth century before Christ. These documents contain some interesting religious material shedding light on the early Chinese conception of nature, which is still prevalent with only slight modifications down to the present day. But the real awakening of philosophical inquiry in China must be said to be in the time when the Chou dynasty (1122-255 B. C.) began to show signs of decline in the seventh century be-

[1] The "Three Rulers," generally known as the Heavenly, Earthly, and Human Sovereigns, are perhaps personifications of the three powers of nature. Their age belongs to the mythological era of Chinese history.

[2] The "Five Emperors" are always mentioned, but their names differ. A most popular enumeration is Fuh Hi, Shên Ming, Huang Ti, Kin T'ien, and Chuan Hü, covering the period 2852-2355 B. C.

[3] The Shu King is one of the five canonical books called *King*, which are: Yi King (Book of Changes), Shih King (Book of Odes), Shu King (Book of History), Li Ki (Records of Rites), and Ch'un Ch'iu (Spring and Autumn.) See the *Sacred Books of the East*, vols. III, XVI, XXVII, XXVIII, and also *Chinese Classics* by Legge, vols. III, IV, V.

[4] The two ideal sage-kings of ancient China. Yao reigned 2356-2255 B. C., and Shun, 2255-2205. B. C.

fore Christ. The Chinese intellect, however, must have been in operation for a long time before this, and the results of it, though imperfect and fragmentary, found their way in some of the appendices of the Yi King and in Laotze's Tao Te King and in other ancient books.

Beginning with the seventh century B. C., a galaxy of philosophical and ethical thinkers led by Laotze and Confucius continued most brilliantly to illuminate the early stage of Chinese philosophy. It was as though one would walk in springtime, after the confinement of a long, monotonous winter, into the field, where flowers of various hues and odors greet him on all sides. Thus, this epoch comprising about four hundred years was one of the most glorious periods in the whole history of Chinese civilization; and because it was suddenly cut short by the Ch'in dynasty, it is commonly known as the Ante-Ch'in period. The Chinese mind may have developed later a higher power of reasoning and made a deeper study of consciousness, but its range of intellectual activities was never surpassed in any other period. If, later on, it gained in precision, it lost sadly in its freedom which sometimes turned to pure wantonness. It had many problems to busy itself with at this awakening stage of national intellectual life. The universe was yet new to the thinking mind, which was able to find problems to grapple with wheresoever its attention was directed, it was so plastic and so creative. But after this there set in a time of induration, whereby the intellectual blood was doomed to run along the old stiffened veins.

An unhappy end came quite abruptly to this glorious Ante-Ch'in period. When in the year 221 B. C. the First Emperor (Shih Huang Tî) of the Ch'in dynasty (221-206 B. C.) succeeded in consolidating the small kingdoms and dukedoms of feudal China into one empire, he took the most drastic measures ever conceived by an absolute monarch

to suppress the spirit of liberty which was just beginning to bloom. He would not tolerate a single thought that did not agree with his. He would not countenance scholars and thinkers who dared to assume an independent air and voice their own opinions. He silenced all criticism by burying his critics alive, and put an end to the discord of beliefs by burning all the books and documents that were not in sympathy with the new administration (213 B. C.). The effects of such radical measures were just what the Emperor desired. He suppressed all independence of thought and reduced the spirit of the nation to a comatose condition, which lasted for a millennium. During these times, China produced not a single original thinker. The cyclone was so destructive, leaving desolation in its wake, that the people did not venture building any new structure of thought, but were constantly endeavoring to recover what they had lost. They made a diligent search among the literary remains. Whatever discoveries they made were carefully studied, and commentaries were written by various hands. Those which could not be found, though their traditional existence was known, were manufactured and came out boldly with the old labels on them. So, this period proved a fruitful season for literary forgery.

Buddhism was introduced during this lethargic period of Chinese thought (213 B. C.—959 A. D.). In spite of the strong conservative spirit of the Celestials, the new doctrine did not meet with great opposition. Finding a similar vein of thought in the teachings of Laotze, the Buddhists utilized his terminology to the best advantage, and also coined a number of new words to express ideas hitherto unknown to the Chinese. A gradual and steady spread of Buddhism among the scholars paved the way for a renaissance under the Sung dynasty (960-1279 A. D.). The people were not observing the propagation of

the foreign doctrine with their characteristic indifference, but gradually recognized the superiority in many respects of the Hindu intellect, especially in metaphysics and methodology. This recognition of the merits of Buddhism was a great impulse to the pedantic disciples of Confucius.

Though the Confucians were not inclined in those days to do anything more than merely editing and commenting upon some lately discovered classics, Chinese Buddhists busily occupied themselves with the elaboration of their sutras. They not only rendered many Sanskrit texts into their own language, but also produced some original religio-philosophical works. Their inspiration, of course, originally came from the Buddhist canons, but they assimilated them so perfectly that Chinese Buddhism can be said to stand on its own footing. Their philosophy was more profound than that of Confucius. Their world-conception penetrated more deeply into the nature of things. We generally understand by the history of Chinese philosophy that of Confucianism, for it is nothing more than that except in the Ante-Ch'in period when other thoughts than those of Confucius appeared in the arena. But if we want to thoroughly understand the train of thought that was prevalent during the renaissance, we cannot ignore the significance of the development of Buddhism during the hibernation period of Confucianism.

The re-awakening of Chinese philosophy under the Sung dynasty marked a clearly defined period in its history. Speculation which was refreshed after its long slumber of one thousand years, now grappled with the questions of the Sphinx more intelligently, if not more boldly, than it did during the Ante-Ch'in period. Buddhism stirred up the Chinese nerve to respond to the new stimuli. It furnished the Chinese stomach with more food to digest and assimilate into its system. But the Chinese did not swallow the new food just as it came to them. They in-

tuitively discarded what they thought was not profitable for their practical nature. They drew inspiration from Buddhism in those problems only which Confucius set up for their intellectual exercise. It may, therefore, be properly said that this period of Chinese renaissance did not bring out any new philosophical problems outside of the narrow path beaten by the earlier Confucians. During the Ante-Ch'in period Confucianism was not yet firmly established, and there were rival doctrines which struggled for ascendancy and recognition. The thinkers of the time felt a strong aversion to being yoked to one set of teachings. But the philosophers of the Sung dynasty would never think of deviating from the old rut. They became conscious of many new thoughts introduced from India, and endeavored to utilize them only so far as they were available for a fuller interpretation of the Confucian doctrines, which, like the will of the Almighty, were to them irrevocable and infallible. They never dreamt of repudiating or contradicting them in any way. All their new acquisitions, from whatever source they might have come, were invariably made use of for the discovery of something hidden in the old doctrines and for a fuller analysis of them. What was original with them was the interpretation of the old system in a new light.

Strictly speaking, the Chinese are not speculative people as the Greeks and Hindus were. Their interests always center in moral science. Whatever subtlety is in reasoning, and whatever boldness in imagination, they never lose sight of the practical and moral aspect of things. They refuse to be carried up to a heaven where inhabitants "neither marry nor are given in marriage." They prefer to be tied down in earthly relations wherever they may go. They would deride those star-gazers whose legs are fatally chained to the earth; for to whatsoever soaring heights man's speculation may climb, he is utterly unable to change

his destiny here below. This must always be kept in mind when we peruse the history of Chinese thought. The practical nature and conservatism of Confucianism put an eternal seal on it, forever forbidding it to wander in a cometary orbit.

The Sung dynasty is followed by the Yin (1271-1363), which did not contribute anything worth especial consideration to the history of Chinese philosophy. This short Mongolian dynasty left its pages opened where it found them. Its successor, the Ming dynasty (1363-1663), however, produced one great moral and intellectual character in the person of Wang Yang-ming (1472-1529). He was a worthy heir to the thoughts that stimulated and rejuvenated the Chinese mind at the time of the Sung renaissance. Though he was not an independent philosopher in the sense of being non-Confucian, he was original enough to find a new path to the confirmation and realization of the old, time-honored doctrines. After the passing of this luminary, the Chinese intellectual heavens have again been overcast with clouds; and from his time until the present day nothing significant and deserving mention has ever stirred the Chinese serenity. Under the present Manchurian dynasty (reigning since 1644), China enjoys a dreamy inactivity induced by the excessive use of the opium of conservatism.

Some time has elapsed since the introduction of Western culture and thought into the Far East, but only a handful of scholars among hundreds of millions of souls have condescended to have a shy look at it, while the remainder are contentedly living in company with their time-worn, thread-bare usages and traditions and superstitions. Any one who knows the Chinese mode of thinking will admit that it may take some five hundred years more to waken the sleeping giant of the Orient intellectually from

his eternal slumber and to make him contribute something of his own to the world-treasury of thought.

GENERAL CHARACTER OF ANTE-CH'IN LITERATURE.

The Ante-Ch'in period yields the richest harvest of original thought in the whole history of Chinese philosophy. As the tide of civilization had then advanced far enough and the general social and political environment of the time was very favorable, the Chinese mind plunged itself unreservedly into a bold speculation on life and the universe. It had nothing so far in the past that would distract it from fully expressing itself. It was ushered into a field whose virgin soil had not yet been touched by human hands. Natural selection had not yet set her stamp on any definite conception of life that seemed universally acceptable to the national intellectual idiosyncrasy. The competition for supremacy was keen and free, and time had not yet announced the survival of the fittest. Confucianism was found still struggling for its existence; Taoism was not yet recognized as a distinct system; the so-called *I-twan*,[5] heterodox teachings, were boldly standing on a level with the orthodox, *Chang-tao*[6]. Enjoying the utmost freedom of speech and unhampered by the tyranny of tradition, every man of intelligence ventured his own opinion and could find a hearing. If the facilities of printing and distribution were such as they are to-day, we can imagine what a spectacular sight the Chinese world of thought would present in this Ante-Ch'in period.

The Chinese mind seems to have exhausted itself in this period, for through the entire course of its history no further original thoughts appeared, than were expressed at this time either explicitly or by implication. Some of the thoughts that were then uttered audibly

[5] 異端 [6] 正道

enough had even to suffer the sad fate of being almost entirely ignored by later philosophers. As soon as the Confucian teachings gained a strong hold on the people, no doctrines were encouraged to develop that did not help to elucidate Confucius in a better light or in a popular form. The history of Chinese thought after the Ch'in closely resembles in this respect that of the European Mediæval philosophy, only the former assumed a milder form; for Confucianism did not favor superstition, fanaticism, and irrational vagaries such as we meet with in the Middle Ages. It was practical to a fault, moralizing and positivistic, and refused to be thrown into the abysmal depths of metaphysics. Consequently, the train of thought found in Taoism could not make any further development even after its contact with Hindu speculation represented in Buddhism. Chwangtze was practically the climax of the Laotzean philosophy, with no system, with no method, but pregnant with mystic suggestions and vague assumptions. Thus, it can be said that the Chinese philosophy of the Ante-Ch'in period was richer in thought, broader in scope, and bolder in speculation than that in any succeeding age.

One thing at least that prevented the Chinese from making headway in their philosophy, is their use of ideographic characters. Not only are the characters themselves intractable, inflexible and clumsy, but their grammatical construction is extremely loose. The verbs are not subject to conjugation, the nouns are indeclinable, no tense-relations are grammatically expressible. Now, language is the tool of reason, and at the same time it is the key to the understanding. When we cannot wield the tool as we will, the material on which we work fails to produce the effects we desire; and the reader is at a loss to understand the real meaning which was intended by the author. How could thinkers of the first magnitude

express themselves satisfactorily in such a language as Chinese? Terseness, brevity, strength, and classical purity are desirable in certain forms of literature, and for this purpose the Chinese language may be eminently adapted. But while logical accuracy and literal precision are the first requisites, those rhetorical advantages mean very little. More than that, they are actually an inconvenience and even a hindrance to philosophical writings.[7]

Another thing that is sadly lacking in the Chinese mind is logic. This fact shows itself in the Ante-Ch'in philosophy and throughout its succeeding periods. In India as well as in Greece, when intellectual culture reached a similar height to that of the Ante-Ch'in period in China, they had their logic and *hetuvidya* (science of causes). They were very strict in reasoning and systematic in drawing conclusions. Their minds seem to have been made of much finer fiber than the Chinese. The latter were filled with common sense and practical working knowledge. They did not want to waste their mental energy on things which have apparently no practical and immediate bearings on their everyday life. They did not necessarily aim at distinctness of thought and exactitude of expression, for in our practical and concrete world there is nothing that can claim absolute exactness. As long as we are moving on earth, the Chinese might have unconsciously reasoned, there was no need for them to get entangled in the meshes of verbal subtlety and abstract speculation. Therefore, when their philosophy did not

[7] We can well imagine what a difficult task it was for the first Chinese Buddhists to render their highly abstract and greatly complicated canonical books into the native tongue. They could never be transformed and compressed into the classical model of Chinese philosophy; and the result was that even to-day after more than one thousand years of intercourse and intermixture with the native thoughts, Buddhist literature forms a distinct class by itself. Those scholars who are versed only in general Chinese classics are unable to understand Buddhist writings. Even Buddhist monks themselves who could not read the Sanskrit or Pali originals must have experienced almost unsurmountable difficulties in understanding the translations of their sacred books.

vanish in the mist of vague mysticism as in the case of Taoism, it tenaciously clung to the agnosticism of every-day experience, in which there was no absolute being, no miraculous revelation, no eternal individual continuity after death.

Now let us see what were the principal thoughts that were being elaborated by the Chinese mind during the Ante-Ch'in period of Chinese philosophy. They will be broadly treated under "Philosophy," "Ethics," and "Religion."

PHILOSOPHY.

The philosophy of the Chinese has always been practical and closely associated with human affairs. No ontological speculation, no cosmogonical hypothesis, no abstract ethical theory, seemed worthy of their serious contemplation unless it had a direct bearing upon practical morality. They did, indeed, speculate in order to reach the ultimate ground of existence, but existence as they conceived it did not cover so wide a realm as we commonly understand it, for to them it meant not the universe in general, but only a particular portion of it, that is, human affairs, and these only so far as they are concerned with this present mundane life, political and social. Thus, we do not have in China so much of pure philosophy as of moral sayings. The Chinese must be said to have strictly observed the injunction: "Know then thyself, presume not God to scan; the proper study of mankind is man." And this fact must be borne in mind when we investigate the history of Chinese philosophy. Though here I have devoted a special chapter to philosophy, it must be understood that the subject was treated by the Chinese somewhat as a side-issue.

Dualism, or the Yin and Yang.

Two antagonistic currents of thought manifested themselves at an early date in the history of Chinese philosophy and run throughout its entire course. One is represented by the Yi King and Confucius (B. C. 551-479),[8] the other by Laotze.[9] The former advocated a dualism and showed agnostic, positivistic, and practical tendencies, while the latter was monistic, mystical, and transcendental.

Dualism was the first speculative philosophy ever constructed by Chinese thinkers. It is set forth in one of the oldest writings called Yi King, "Book of Changes." The book is, however, the most unintelligible, most enigmatical document ever found in Chinese literature. Many conflicting theories have been advanced as to its real value and meaning, and we have not yet come to any definite settlement. As far as I can judge, its true significance had been entirely lost even as early as the beginning of the Chou dynasty. Not being able to determine its exact nature, King Wen (B. C. 1231-1135) and Lord Chou (who died B. C. 1105) took it for a sort of general treatise on natural phenomena and human affairs, and upon this surmise they

[8] What was done by Confucius along the line of literary work, was mostly the compiling and editing of old records and traditions. Of the Five Canonical Books thus edited by him, the Spring and Autumn undoubtedly comes from his own pen, but certain parts of the Book of Changes (*Yi King*) known as "Appendices" and usually ascribed to his authorship are denied by some scholars to be indisputably his. The best book that gives his unadulterated views is the Analects (*Lun Yü*) compiled probably by his immediate disciples after his death. It also throws light on his personality. It is the New Testament of Confucianism. An English translation (second edition) by Legge was published in 1893. The volume also contains his translation of the other two of the Four Books (*shu*), that is, The Great Learning (*Tai Hsiao*) and The Doctrine of the Mean (*Chung Yung*). The Mencius, the fourth book of the Four Books, was also translated by Legge, and forms the second volume of *Chinese Classics*.

[9] The life of Laotze is almost lost in a legendary mist, but one thing that is authentically known is that he was an older contemporary of Confucius and flourished during the sixth century before Christ. The Tao Teh King, "Canon of Reason and Virtue," is the title of his only work, which is said to have been written by him through the request of his friend and disciple, Kwan Yin-hi, when the old philosopher was leaving his own country. More about the book below.

wrote some commentary notes which imply suggestions of practical wisdom and moral instructions. Some four hundred years later, Confucius again struggled hard to arrive at a definite and true estimate of the book. He seems to have been not wholly satisfied with the practical interpretation of it by Wen and Chou. He wished to find a speculative philosophical foundation in the apparently confusing and enigmatic passages of the Yi King. He is said to have expressed his earnest desire to have his life prolonged several years, so that he could devote them exclusively to the study of this mysterious literature. The "Appendices"[10] popularly ascribed to Confucius contain some philosophical reflections, and on that account some later exegetists declare that the Yi King was primarily a philosophical treatise and later transformed into a book of divination. Whatever the true nature of the book, it is from this that early Chinese thinkers derived their dualistic conception of the world.

Some lexicographers think that the character *yi*[11] is made of "sun"[12] and "moon"[13]. Whether this be the real origin of the character or not, the interpretation is very ingenious, for *yi* means change in any form,—the change from daylight to moonlight night, the change from blooming springtime to harvesting autumn, or the change from fortune to ill luck and *vice versa*. Change is a predominant characteristic of all existence; and this is caused by the interplay of the male (*yang*) and the female (*yin*) principles in the universe. According to the interaction of these opposite forces, which in the Yi King proper are called *Chien*[14] and *K'un*[15] and represented respectively by a whole line and a divided line, beings now come into exist-

[10] We do not know certainly whether Confucius really wrote those "Appendices." They may contain some of his own words and thoughts, especially in such passages as introduced by "The Master said"; but the "Appendices" as a whole were evidently written by many hands, as their styles and expressions and points of view vary widely from one another.

[11] 易 [12] 日 [13] 月 [14] 乾 [15] 坤

ence and now go out of it, and a constant transformation in the universe takes place.

So it is said in the Appendix III, (cf. Legge, p. 348 et seq.): "Heaven is high, earth is low; and [the relation between] the strong (*chien*) and the weak (*k'un*) is determined. The low and the high are arranged in order, and [the relation between] the noble and the lowly is settled. Movement and rest follow their regular course, and [the relation between] the rigid and the tender is defined.

"Things are set together according to their classes; beings are divided according to their groups; and there appear good and evil. In the heavens there are [different] bodies formed; and there take place changes and transformations.

"Therefore, the rigid and the tender come in contact; the eight symbols interact. To stimulate we have thunder and lightning. To moisten we have wind and rain. The sun and moon revolve and travel, which give rise to cold and warmth.

"The strong principle makes the male, and the weak principle makes the female. By the strong the great beginning is known, and weak brings beings into completion. The strong principle becomes intelligible through changes, the weak principle becomes efficient through selection. The changing is easy to understand. Selection is easy to follow. As it is easy to understand, there grows familiarity: as it is easy to follow efficiency is gained. That which is familiar will last: that which is efficient will be great. Lasting is the virtue of a wise man; great is the accomplishment of a wise man. Through change and selection is obtained the reason of the universe. When the reason of the universe is obtained, the perfect abides in its midst."

Again, Confucius says in Appendix IV (cf. Legge, p. 395): "The strong and the weak are the gates of change.

The strong is the male gender, and the weak is the female gender. When the male and the female are united in their virtues, the rigid and the tender are formulated, in which are embodied all the phenomena of heaven and earth, and through which are circulated the powers of the spirits bright."

To make another quotation, in which the gist of the dualistic conception of the Yi King is more concisely stated (Appendix VI, cf. Legge, p. 423): "In olden times when the wise men made the Yi, they wanted it to be in accord with the nature and destiny of things, which is reason. Therefore, they established the heavenly way in Yin and Yang; they established the earthly way in tenderness and rigidness; they established the human way in humaneness and righteousness. Thus, each of the three powers of nature was made to be controlled by a set of two principles."

Whatever we may call them, the strong and the weak, or the rigid and the tender, or the male and the female, or heaven and earth, or Yang and Yin, or Chien and K'un, there are according to the Yi King two independent principles, and their interplay governed by fixed laws constitutes the universe. And these fixed laws are nothing else than the sixty-four trigrams (*kua*)[16] as defined and explained, however enigmatically, in the Yi King proper. The practical Chinese mind, however, did not see this numerical conception of the world in its widest philosophical significance as Pythagoras did, but confined it to the vicissitudes of human affairs. Even when Confucius attempted to see a natural philosophical basis in the composition of the Yi King, he could not ignore its ethical bearings and plunged himself deeply into bold speculations. The most prominent trait of the Chinese mind is to moralize on every imaginable subject. They could not but betray this

[16] 卦

ndency even with the apparently nonsensical whole and ivided strokes of the eight trigrams.[17]

Positivism.

Along with a dualistic conception of nature, what is ost characteristic of Chinese thought is its strong aver- on to metaphysics. Avowed assertions of this sentiment ave been repeatedly made by Confucius and his school, ho later on proved to be the typical representative of the hinese national mind. They persistently refused to go eyond our everyday experiences. Their prosaic intellect ways dwelt on things human and mundane. The discov- y of two contrasting principles in nature satisfied their peculative curiosity, if they had any; they did not venture to a realm beyond the interaction in this visible uni- erse of the Yin and Yang. And it was through this teraction that some definite laws have come to be es- blished in the physical world as well as in the moral, nd these laws are curiously set forth in the Book of hanges. Therefore, what we have to do here on earth to put ourselves in harmony with these laws. When is is done, our life-program as human being is com- leted. Why shall we go beyond these observable and telligible laws of nature and morality, only to find out mething transcendental and therefore necessarily hav- g no practical bearings on our earthly life? Are we not fficient unto ourselves without making our imagination ar high? This is the most characteristic attitude of onfucius.

Says Confucius, "How could we know death when

[17] I shall not venture my opinion concerning the nature and significance the Yi King proper, as this does not particularly concern us here. The Appendices" are more important and interesting as embodying an early stem of Chinese speculation and as forecasting the development of Chinese ilosophy in the Sung Dynasty. For further information concerning the *a* (trigrams) and *yao* (lines) of the Yi King, see Dr. Carus's *Chinese Phi- sophy* and *Chinese Thought*, p. 25 ff. (Open Court Publishing Co., Chicago) d Legge's Yi King in the *S. B. E.*, vol. XVI.

life is not yet understood?" (An., bk. XI.) Again, "Do not trouble yourselves with things supernatural, physical prowess, monstrosities, and spiritual beings." (Bk. VII.) Again, "How could we serve spiritual beings while we do not know how to serve men?" (Bk. XI.) In the Doctrine of the Mean (*Chung Yang*), however, Confucius expresses himself much more plainly concerning spiritual beings. (Chapter XVI): "How glorious are the virtues of spiritual beings! Our eyes cannot perceive them, our ears cannot hear them, yet they embody themselves in all things, which cannot exist without them. Yet, [the spirits] make all the people in the world regulate themselves, cleanse themselves, and, clad in the ceremonial dress, attend to the sacrificial ceremony. How full and pervading they are! They seem to be above us, they seem to be with us. It is said in the Odes that the coming of the spirits is beyond [human] calculation, and much more beyond a feeling of aversion. The reason why the invisible are so manifest is that sincerity can never be concealed."

According to these passages, the Confucian doctrine is quite apparent. There might be something on the other side of this life. All these natural phenomena and moral doings might have something underneath them, from which they gain their evidently inexplicable energy. Indeed, we feel the existence of something invisible, we are compelled to acknowledge this fact as at the time of the sacrificial ceremony. But we do not know its exact nature and signification, which are too deep or too hidden for the human understanding to unravel. As far as its apparent recognizable laws and manifestations are concerned, they are, however enigmatically, stated in the Book of Changes, and all that we mortals have to do in this world is to understand these knowable phenomena and leave alone the unknowable. This line of argument seems to have appealed most strongly to the Confucian mind.

Indeed, the Confucians and other philosophers speak of T'ien[18] or Heaven, or Heavenly Destiny (*t'ien ming*),[19] or the Great Limit (*t'ai chi*)[20]; but they never seem to have attempted any further investigation of the nature of this mysterious being or principle called T'ien.

* * *

It is in the Yi King that we can trace, though very sporadically, an idealistic, monistic, and mystical tendency, which finally developed into the speculative philosophy of the Sung dynasty, but which was almost completely neglected by the early advocates of the Confucian school. I shall quote here some passages from the Yi King to illustrate my point. Before quoting, however, it will be opportune to remark here that the term "Yi" sometimes has the force and signification of an abstract principle itself rather than the actual phenomenon of mere transformation or interaction, and again that it sometimes designates a system of philosophy which most truthfully explains the reason of all changes in this dualistic world.

"The Yi[21] is not conscious, nor does it labor; it is quiet and does not stir. It feels and then communes with the wherefore of the universe. If it were not the most spiritual thing in the universe, how could it behave this wise?

"It is through the Yi that holy men fathom the depths [of being] and explore the reason of motion (*chi*).[22] Deep it is, and therefore it is able to comprehend the will of the universe. It is the reason of motion, and therefore it is able to accomplish the work of the universe. It is spiritual, and therefore it quickens without being speedy, it arrives without walking."

Further, we read (cf. Legge, p. 373): "Therefore, the Yi has the great origin (*t'ai chi*), which creates the two principles; and the two principles create the four symbols (*hsiang*); and the four symbols create the eight trigrams

[18] 天 [19] 天命 [20] 太極 [21] Cf. Legge, p. 370. [22] 幾

(*kua*). The eight trigrams determine the good and evil; and the good and evil create the great work."

In the first of the so-called Confucian Appendices (Hsi Tz'u),[23] we have:

"The Yi is in accord with Heaven and Earth, and therefore it pervades and is interwoven in the course of Heaven and Earth.

"Look upward, and it is observable in the heavenly phenomena; look downward, and it is recognizable in the earthly design. And it is for this reason that the Yi manifests the wherefore of darkness and brightness.

"As it traces things to their beginning and follows them to their end, it makes known the meaning of death and birth.

"Things are made of the subtle substance (*ching ch'i*)[24] and changes occur on account of the wandering spirits (*yu 'hun*).[25] Therefore, the Yi knows the characters and conditions of the spiritual beings (*kuei shan*).[26]

"The Yi seems to be Heaven and Earth themselves, and it therefore never deviates. Its wisdom penetrates the ten thousand things. Its way delivers the world, and it therefore never errs. It rejoices itself in heavenly [ordination] and knows its own destiny; therefore, it never grieves. It rests in its own abode, and its lovingkindness is sincere, and therefore it is capable of its love. It moulds and envelops all the transformations in Heaven and Earth; and it never errs [in its work]. It thoroughly brings all the ten thousand things into completion, and there is nothing wanting in them. Its wisdom passes through the course of day and night. Therefore, the spirits have no quarters, and the Yi has no materiality."

Finally, Yi seems to be used in the sense of *Gesetzmässigkeit*. For instance (cf. Legge, p. 377):

"When Ch'ien (male) and K'un (female) are ar-

[23] 繫辭上傳 Cf. Legge, p. 353 [24] 精氣 [25] 游魂 [26] 鬼神

ranged in order, the Yi is established between them. When Ch'ien and K'un are destroyed, there is no way of recognizing the Yi. When the Yi is no more recognizable, Ch'ien and K'un may be considered to have altogether ceased to exist."

All these are interesting thoughts, and if Confucius was the real author of these Appendices to the Yi King, from which these quotations are taken, they will prove that Confucius was not after all merely a moral teacher, but was capable of delving deep into the mysteries of life and existence; and we can say that what made the latter-day Confucianism such as it is, is more or less due to the emphasis by its followers of certain practical features of the Confucian doctrine at the expense of its more speculative side. If the master were followed more faithfully and his teachings were developed in all their diverse features, there might have been a much earlier reconciliation between Laotzeanism and Confucianism.

* * *

Mencius[27] who was the most brilliant and most militant of all the Confucians of the Ante-Ch'in period, and through whom Confucianism can be said to have been finally and definitely established in such form as we understand it now, speaks of the *Hao jan chi ch'i*[28] as filling the universe. (Bk. III.) This Ch'i can freely be translated "universal energy" or "impulse that awakens, stim-

[27] 孟子 His date is not exactly known. He seems to have lived somewhere between B. C. 379 and 294. Mencius is the Latinized form of Mangtze. His work which bears his own name consists of seven chapters or books. Similar to the Confucian Analects, it is mainly composed of the dialogues which took place between the author and the feudal lords of his days whom he visited, and also of those between him and his followers as well as contemporary scholars. Legge's English translation of the Mencius is included in the *Chinese Classics*. Arthur B. Hutchinson published in 1897 an English translation of Farber's *Mind of Mencius* which is written in German. The subtitle of the book is "Political economy based upon moral philosophy, a systematic digest of the doctrines of the Chinese philosopher."

[28] 浩然之氣

ulates, and accelerates activity"; it is a kind of psychical agency which animates life on this earth; it is a nervous system of the macrocosm. But Mencius did not use the term in such a broad sense, he limited its sphere and value of activity to our moral life. It is more definite, more psychical, and therefore nearer to humanity than the Confucian conception of T'ien or T'ien Ming, which seems to be a vestige, though considerably refined, of natural religion as professed in the Shu King or Shih King. None the less Mencius's Ch'i was too practical, too ethical, to be elevated to the dignity of a universal principle of existence. He did not apparently take any interest in the metaphysical side of the Yi system. He developed only the ethicalism of his great predecessor, though not in its entirety and completeness. He was truly the representative of the Confucian positivism.

Monism.

There were not lacking, however, in the Ante-Ch'in period certain tendencies that counterbalanced the ultra-practical, positivistic train of thought as represented by Confucianism. Though these tendencies did not attain a full manifestation at any time in the history of Chinese thought, they showed a strong front at this incipient stage to their antagonistic systems. They sprang mainly from the teachings of the Tao Te King,[29] and may be characterized as monistic, mystic, transcendental, and sometimes pantheistic. Laotze, however, was not the first and sole expounder of these thoughts. He doubtless had many predecessors whose words and lives are scatteringly re-

[29] There exist several translations of this most widely known book of Taoism in the English as well as other European languages. It is a short work consisting of some five thousand Chinese characters. It is divided into eighty-one chapters as we have it now, but the division was not the author's own, and it sometimes distracts us from an intelligent reading of the book as a whole, which may best be considered a compilation of epigrams and aphorisms.

corded by Confucius, Mencius, Chwangtze, Liehtze, and others, including Laotze himself. What was most meritorious in the author of the Tao Te King was that he gave to these thoughts a literary form through which we are able to trace the history of the Chinese monistic movement to its sources.

When we pass from Confucius to Laotze, we experience an almost complete change of scenery. Confucius, in whom the Chinese minds are most typically mirrored, rarely deviates from the plain, normal, prosaic, and practical path of human life; and his eyes are steadily kept upon our earthly moral relations. Laotze occasionally betrays his national traits, but he does not hesitate to climb the dizzy heights of speculation and imagination. The very first passage of the Tao Te King shows how different his mode of thought is from that of the Confucian school.

"The reason (*tao*) that can be reasoned is not the eternal reason. The name that can be named is not the eternal name. The unnamable is the beginning of heaven and earth. The namable is the mother of the ten thousand things. Therefore, in eternal non-being I wish to see the spirituality of things; and in eternal being I wish to see the limitation of things. These two things are the same in source but different in name. Their sameness is called a mystery. Indeed, it is the mystery of mysteries. It is the door to all spirituality."

According to Laotze, there is only one thing which, though indefinable and beyond the comprehension of the human understanding, is the fountain-head of all beings and the norm of all actions. Laotze calls this Tao. The Tao is not only the formative principle of the universe, it also seems to be the primordial matter. For he says in Chapter XXV of the Tao Te King:

"There is a thing, chaotic in its composition, which was born prior to Heaven and Earth. How noiseless!

How formless! Standing in its solitiude, it does not change. Universal in its activity, it does not relax; and thereby it is capable of becoming the mother of the world."

Again, in Chapter XIV, "We look at it, but cannot see it; it is called colorless. We listen to it, but cannot hear it; it is called soundless. We grasp it, but cannot hold it; it is called bodiless. The limits of these three we cannot reach. Therefore, they are merged into one.

"Its top is not bright, its bottom is not murky; its eternity is indefinable; it again returns into nothingness. This I call the shapeless shape, the imageless form; this I call the obscure and vague. We proceed to meet it, but cannot see its beginning; we follow after it but cannot see its end."

In what follows (Chap. XI), Laotze again seems to conceive his Tao at once the formative principle of the universe and the primordial matter from which develops this phenomenal world.

"The nature of the Tao, how obscure, how vague! How vaguely obscure! and yet in its midst there is an image. How obscurely vague! and yet in its midst there is a character. How unfathomable, how indefinite! yet in its midst there is an essence, and the essence is truly pure, in it there is faith. From of old till now, its name never departs, it reviews the beginning of all things."

The Tao, as the reason of the universe and as the principle of all activity, is something unnamable and transcends the grasp of the intellect. The Tao as primordial matter from which this world of particulars has been evolved, is a potentiality; it has a form which is formless; it has a shape which is shapeless; it is enveloped in obscurity and utter indeterminateness. According to what we learn from the Tao Te King, Laotze seems to have comprehended two apparently distinct notions in the conception of Tao. He was evidently not conscious of this

confusion. The physical conception, as we might call it, developed later into the evolution-idea of the *T'ai Chi*[30] by the early philosophers of the Sung dynasty, who endeavored to reconcile the Yi philosophy with the Taoist cosmogony. The metaphysical side of Laotze's Tao-conception not only was transformed by his early followers into pantheism and mysticism, it also served as an electric spark, as it were, to the explosion of the famous controversy of the Sung philosophers concerning Essence (*hsing*)[31] and Reason (*li*).[32] Whatever this be, Laotze was the first monist in Chinese philosophy, as the Yi King was the first document that expounded dualism.

Laotze's[33] philosophical successors in the Ante-Ch'in period, whose literary works have been fortunately preserved down to the present day, are Liehtze, Chwangtze, and perhaps Kwanyintze. They all developed the monistic, mystical, idealistic thoughts broadly propounded in the Tao Te King. Being ushered into the time when the first speculative activities of the Chinese mind had attained to their full vigor, those Taoist philosophers displayed a depth of intellectual power, which has never been surpassed by later thinkers in its brilliancy and freshness.

[30] The term "T'ai Chi" 太極 first appears in one of the Confucian appendices to the Yi King: "In the system of the Yi there is the Great Limit [or source, *t'ai chi*]. It produces the two principles."....This passage has been quoted elsewhere. Here, however, the term *t'ai chi* does not seem to have had a very weighty significance. It merely meant what it literally means, "great limit." The important philosophical sense it came to bear, originates with a thinker of the Sung dynasty called Chou Tun-i (A. D. 1017-1073). According to him, "The Limitless is the Great Limit. The Great Limit moved, and it produced Yang (male principle. At the consummation of the motion there was a rest in the Great Limit. While resting it produced Yin (female principle). At the consummation of the rest it resumed motion. Now moving, now resting, each alternately became the root of the other. With this division of the Yin and the Yang, there were permanently established the two principles."

[31] 性 [32] 理

[33] The character *tze*, which is found in connection with most of the Chinese philosophers' names, has an honorary significance. It primarily means a child, then son, then any male, young or adult or old, and finally gentleman. It also means teacher, sage, philosopher. As a term of address it is equivalent to sire or sir.

What most distinguishes Liehtze[34] in the galaxy of Taoists is his cosmogony. According to him, this namable world of phenomena evolved from an unnamable absolute being. This being is called Tao, or the Spirit of Valley (*ku shên*),[35] or the Mysterious Mother (*hsuan p'in*),[36] all these terms being used by his predecessor, Laotze. The evolution did not take place through the direction of a personal will, that has a definite, conscious plan of its own in the creation or evolution of a universe. Liehtze says that the unnamable is the namable, and the unknowable is the knowable. Therefore, he did not see the need of creating a being or power that stands independent of this namable and knowable world. It was in the very nature of the unnamable that it should evolve a world of names and particulars. It could not do otherwise. Its inherent nature necessitated it to unfold itself in the realm of the Yin and Yang.

To speak more definitely in the author's own words: "There was at the beginning Chaos (*hun tun* or *hun lun*),[37] an unorganized mass. It was a mingled potentiality of Form (*hsing*),[38] Pneuma (*ch'i*),[39] and Substance (*chih*).[40] A Great Change (*tai yi*)[41] took place in it, and there was a Great Starting (*tai chi*),[42] which is the beginning of Form. The Great Starting evolved a Great Beginning (*tai shih*),[43] which is the inception of Pneuma. The Great Beginning was followed by the Great Blank (*tai su*),[44] which is the first formation of Substance. Substance,

[34] 列子 Liehtze, otherwise called Lieh Yü-kou, is generally known to have lived between the times of Laotze and Chwangtze, that is, sometime in the fifth century before the Christian era. The work which goes under his name seems to have been compiled by his disciples. It consists of eight books or chapters and was first edited in the fourth century A.D. by Chang Chên of the Tsin dynasty. I have no knowledge of any English translation of the Liehtze. My quotations here are mostly taken from Book I, in which his ontological views are comprehensively presented. It is very desirable that some one will undertake the task of translating the entire work, for that will throw much light on the significance of the Taoistic thought.

[35] 谷神 [36] 玄牝 [37] 渾沌 or 渾淪 [38] 形 [39] 氣
[40] 質 [41] 太易 [42] 太初 [43] 太始 [44] 太素

Pneuma, and Form being all evolved out of the primordial chaotic mass, this material world as it lies before us came into existence."

In these statements Liehtze appears to have understood by the so-called Chaos (*hun lun*) only a material potentiality. But, as we proceed, we notice that he did not ignore the reason by which the Chaos was possible to evolve at all. The reason is the Tao, or as he calls it, the Solitary Indeterminate (*i tuh*),[45] or the Going-and-Coming (*wang fuh*),[46] or Non-activity (*wu wei*).[47] The Solitary Indeterminate is that which creates and is not created, that which transforms and is not transformed. As it is not created, it is able to create everlastingly; as it is not transformed, it is able to transform eternally. The Going-and-Coming neither goes nor comes, for it is that which causes things to come and go. Those that come are doomed to go, and those that go are sure to come, but the Coming-and-Going itself remains forever, and its limitations can never be known.

"What comes out of birth is death, but what creates life has no end. What makes a concrete object is substance, but what constitutes the reason of a concrete object has never come to exist. What makes a sound perceptible is the sense of hearing, but what constitutes the reason of sound has never manifested itself. What makes a color perceptible is its visibility, but what constitutes the reason of color has never been betrayed. What makes a taste tastable is the sense of taste, but what constitutes the reason of taste has never been tasted. For all this is the function of non-activity (*wu wei*), that is, reason."

Will there be no end to this constant coming and going of things? Is the world running in an eternal cycle? Liehtze seems to think so, for he says: "That which has life returns to that which is lifeless; that which has form

[45] 疑獨 [46] 往復 [47] 無爲

returns to that which is formless. That which is lifeless does not eternally remain lifeless; that which is formless does not eternally remain formless. Things exist, because they cannot be otherwise; things come to an end, because they cannot be otherwise; just as much as those which are born, because they cannot be unborn. They who aspire after an eternal life, or they who want to limit their life, are ignoring the law of necessity. The soul is heavenly and the bones are earthly. That which belongs to the heavens is clear and dispenses itself. That which belongs to the earth is turbid and agglomerates itself. The soul is separated from the body and returns (*kwei*)[48] to its own essence. It is, therefore, called spirit (*kwei*).[49] Spirit is returning, that is, it returns to its real abode."

Liehtze thus believes that the cycle of birth and death is an irrevocable ordeal of nature. This life is merely a temporary abode and not the true one. Life means lodging (or sojourning or tenanting) and death means coming back to its true abode. Life cannot necessarily be said to be better than death or death than life. Life and death, existence and non-existence, creation and annihilation, are the inherent law of nature, and the world must be said to be revolving on an eternal wheel. The wise man remains serene and unconcerned in the midst of this revolving; he lives as if not living.

The following passage taken from the Liehtze will throw light on his transcendental attitude toward life and the universe.

"A man in the state of Ch'i was so grieved over the possible disintegration of heaven-and-earth and the consequent destruction of his own existence that he could neither sleep nor eat.

"A friend came to him and consolingly explained to him: 'Heaven-and-earth is no more than an accumulated

[48] 歸 [49] 鬼

pneuma, and the sun, moon, stars, and constellations are pure luminary bodies in this accumulation of pneuma. Even when they may fall on the ground, they cannot strike anything. The earth is an accumulation of masses filling its four empty quarters. Treading on it will not cause it to sink.'

"With this both were satisfied.

"Chang-Tutze heard of it and said, 'The clouds and mist, the winds and rains are accumulated pneuma in the heavens, and the mountains and plains, the rivers and seas are accumulated forms on earth; and who can say that they will never disintegrate?

" 'Heaven-and-earth is merely a small atom in space, though the hugest among all concrete objects. It goes without saying that we are unable to survey its end or its limits; it goes without saying that we cannot have its measurement and know its nature.

" 'He who grieves over its possible disintegration must be considered truly great, and he who thinks of it as indestructible is not quite right. Heaven-and-earth must suffer a disintegration. There must surely be the time when it falls to pieces. And how could we be free from apprehension when it actually begins to fall?'

"When this was communicated to Liehtze, he laughed, saying, 'It is as great a mistake to assert that heaven-and-earth is falling to pieces, as to deny it. Whether it falls to pieces or not, we have no means to tell. But that is one thing, and this is another. Therefore, life does not know of death, nor does death know of life. Coming does not know of going, nor does going know of coming. To go to pieces or not to go to pieces,—this does not at all concern me.' "

Transcendentalism.

Chwangtze,[50] who appeared a little later on the stage of philosophical speculation, was the most brilliant Taoist China has ever produced. Liehtze might have been deeper in one sense than his successor, but he was not such a brilliant genius as the latter. The main philosophical problems handled by Chwangtze were those of Laotze, but in many points he extended and detailed what was merely vaguely suggested by his predecessors. He maintained with Laotze that the world started from the Nameless, but Chwangtze's Nameless is more absolute and transcendental, if we could use the expression, than that of Laotze; for Chwangtze declares that when we say there was non-existence (*wu*) before existence, this non-existence somewhat suggests the sense of relativity and conditionality, but in truth there cannot be any such existence as non-existence; and therefore it is better to say that there was in the beginning a "non-existence of non-existence" (*wu wu*), that is, not conditional non-existence, but absolute non-existence. ("The Inner," Book II.) Thus Chwangtze delighted in subtle dianoetic argument.

At the time of Chwangtze, there was such a confusing and contradicting philosophical controversy as to awaken him from the transcendental enjoyment of a self-forgetting trance. Chwangtze was convinced of the ultimate unreality of this phenomenal world, in which he did not

[50] Chwangtze was a contemporary of Mencius and must have flourished toward the end of the fourth century B. C. He was a great classic writer and his writings are considered among the best specimens of early Chinese literature. His work which we have now is divided into three parts, "Inner," "Outer," and "Miscellaneous," altogether consisting of thirty-three books. As it is said that originally it was made up of fifty-three books, twenty of them are missing now. About the genuineness of the writings, a concensus of opinion is that the first "Inner" part undoubtedly comes from his own hand, but that the remaining two parts are so interlaced with spurious passages that it is difficult to distinguish one from the other. But, generally speaking, even those spurious parts are no more than a development of Chwangtze's own thoughts. We have two English translations of the Chwangtze, one by Giles and the other by Legge in the *Sacred Books of the East.*

know whether or not he was a dream-existence of the butterfly.[51] He argued that as long as things in this world are conditional and limit one another, there is no avoidance of controversy and contradiction. Each individual mind has its own idiosyncrasy. One and the same truth is reflected therein, perhaps, but each responds differently according to its inner necessity. Suppose a gale sweeps over a mountain forest. The trees resound with their various notes according to all possible differences of the cavities which may be found in them. Some sound like fretted water, some like the arrow's whiz, some like the stern command of a military officer, some like the gruff roar of a lion, and so on *ad infinitum*. ("The Inner," Bk. II.) And what need would there be to pass a judgment on these multitudinous notes and declare that some and not others are correct representations of the truth?

Chwangtze, therefore, says that no good can come out of engaging in a controversy of this nature. As long as this is a relative and conditional existence, there must be good and evil, affirmation and negation, coming and going. It is the height of foolishness to argue that as I am walking one way every man must and ought to walk the same way. Has not everybody the will and right to go his own way? As I should not be compelled by others to deny my own nature, they have the same privilege to follow their own inclinations. What is good to me is not necessarily so to others, and *vice versa*. Chwangtze thus insists in giving every one his freedom and the right to think and act as he sees fit, and thereby wishes to reach the point where all controversies are eternally settled.

[51] "Formerly, I, Chuang Chou, dreamt that I was a butterfly, a butterfly flying about, feeling that it was enjoying itself. I did not know that it was Chou. Suddenly I awoke and was myself again, the veritable Chou. I did not know whether it had formerly been Chou dreaming that he was a butterfly, or whether it was now a butterfly dreaming that it was Chou. But between Chou and the butterfly there must be a difference. This is a case of what is called the transformation of things." ("The Inner," Book II.)

But how can we find out what is the real intrinsic nature of each individual existence? Chwangtze seems to think that the Tao is present in every being, and that the reason why we are in the wrong habit of confusing what is right with what is not right, is because we do not let the Tao work its own way, and, therefore, if we rid ourselves of all the subjective prejudices that we may possess and freely follow the course of the Tao, every being would enjoy his own inherent virtue, and there would be no controversies and altercations, but our life would be blessed with the transcendental bliss of the Infinite Tao. It is thus simple enough, believes Chwangtze, to find the real nature of things. Befree yourself from subjective ignorance and individual peculiarities, find the universal Tao in your own being, and you will be able to find it in others too, because the Tao cannot be one in one thing and another in another. The Tao must be the same in every existence because "I" and the "ten thousand things" grow from the selfsame source, and in this oneness of things we can bury all our opinions and contradictions. He says: "Let us make our appeal to the infiniteness [of the Tao] and take up our position there." We observe here a subjective tendency of Taoism, which distinguishes itself so characteristically from its rival doctrine, Confucianism.

In the following passage we notice a characteristic tendency of the Taoist philosophers:

"Why is the small man so restive? Why is he hampered by his medium intelligence, and why can he not attain to a larger view of things? Because he is entangled by his passions: joy, anger, grief, satisfaction, worry, despondency, unsteadiness, ardor, wildness, indulgence, suggestibility, destructiveness, and willingness; but they are all empty in their nature, they are like so many musical notes that come from the hollowness of an instrument, or like the fungi that grow from the moisture of a tree. They are

suddenly born and suddenly die, they do not abide even for a moment. Thus, they are changing day and night as I witness them, and I know not whence they are born. Is it due to a universal impulse in nature? But if there were nothing changing before me, my own existence might also cease. If I were non-existence, they too would not stand by themselves. Then it must be said that they and I are mutually conditioning that to which we owe our effectiveness.

"But what is that which makes us such as we are? I do not know. May I assume the existence of an absolute Ruler who makes things as they are? Yet I am unable to grasp his peculiarities. All that I know of him is that his working is practicable though his features are hidden. He has indications but no forms.

"Looking over my body I find a hundred bones, nine orifices, and six visceras, and I feel no partiality or specific inclination toward any of them. They are making of one another servants and maids. When these servants and maids are unable to govern one another, they finally assume the relation of master and servant. By ruling others and by being ruled by them in turn, the nourishment of the body is effected.

"Judging from this standpoint, it is reasonable to conceive of the existence of an absolute Master, yet it would not make a particle of difference to this absolute Master whether our intelligence is allowed to catch a glimpse of his signs or not. We are such as he made us."

Pantheistic Mysticism.

When speculation reaches this point, it naturally turns toward pantheistic mysticism. Intellectual discrimination and the analytical process of reasoning give way to a mystic contemplation of the Absolute. It is peculiar to the human mind that while the intellect is ever struggling

to attain to a definite conception of the universe and to state it in most positive terms, the imagination and faith, poetic and religious, insist on concretely and immediately grasping that something which is so slippery as to defy all rationalistic apprehension and yet presents itself with annoying persistence before our inner eyes. The intellect sometimes gains ascendency, and then we have an outspoken expression of positivism. When its days are gone, as the history of thought proves everywhere, we have the predominance of mystic tendencies in philosophy. We find the mystic culmination of Taoism in Kwanyintze.

Kwanyintze, according to Ssu Ma-ch'ien's Historical Records (*Shi Chi*),[52] seems to have been acquainted with Laotze, who was requested by him to write a book on Taoism. Kwanyintze, therefore, is earlier than Liehtze and Chwangtze, but the work ascribed to him and still in our possession is evidently a later production, though it may contain some of his own sayings scattered in the book. Strictly speaking, it may not be proper, therefore, to classify the Kwanyintze[53] with the Chwangtze and the Liehtze as Ante-Ch'in literature, but it contains many characteristic Taoist thoughts which can be regarded as a direct and unbroken linear development of Chwangtze and Liehtze. Hence its place here as the last of the Taoist thinkers.

That the Kwanyintze is a later production than the Chwangtze, can be seen in a comparison of their conceptions of the Tao. According to Chwangtze (Part I, Sect. VI): "This is the Tao:—there is in it Emotion and Sincerity,[54] but it does nothing and has no bodily form. It

[52] 史記

[53] 關尹子 This book has not been translated, so far as I know, into any European language. It is doubtless a much later production, but contains a great deal of profound philosophical reflection worth studying by Occidental sinologues.

[54] No original text is accessible here and I am unable to ascertain the exact meaning of these words "Emotion" and "Sincerity." The translation

may be handed down [by the teacher], but may not be received [by the scholar]. It may be apprehended [by the mind], it can not be perceived [by the senses]. It has its root and ground in itself. Before there were heaven and earth, from of old it was securely existing. From it came the mysterious existence of spirits, from it came the mysterious existence of God. It produced heaven, it produced earth. It was before the T'ai Chi and yet could not be considered deep. [It was above time and space.] It was produced before heaven and earth, and yet could not be considered to have existed long. It was older than the highest authority, and yet could not be considered old."

Now, according to the Kwanyintze, the Tao is that which is above all thinkability and explicability. When this Tao is evolved, there appear heaven and earth and the ten thousand things. But the Tao in itself does not fall under the categories of freedom and necessity, of mensuration and divisibility. Therefore, it is called Heaven (*t'ien*),[55] Destiny (*ming*),[56] Spirit (*shên*),[57] or the Mysterious (*hsüen*).[58] It is each and all of these. As thus the one Tao asserts itself and manifests itself in all possible existences, there is nothing that is not the Tao. All things are the Tao itself. It is like the relation between fire and fuel. One flame of fire burns all kinds of fuel. But the fire is not independent of the fuel. When all the fuel burns out, there is no more fire left, as neither is separable from the other. So, one breath of Tao penetrates throughout the ten thousand things. They are in it and it is in them, they are it, and it is they. Find it in yourself and you know everything else, and with it the mystery of heaven and earth. (Book I.)

by Legge, whose interpretation of Chinese philosophical thought, though generally acceptable, is not always in accord with my own.

[55] 天 [56] 命 [57] 神 [58] 玄

Therefore, the essence of heaven and earth is the essence of my self; the spirit of heaven and earth is the spirit of my existence. When one drop of water is merged into the waters of a boundless ocean, there is no distinction between the two, but a complete homogeneity. Therefore, the holy man recognizes unity in multiplicity and multiplicity in unity. The multitude may change, may go through an endless series of transformation, but the one is eternally unchangeable. Shadows come and go, but the water which reflects them remains forever tranquil. The wise live in this tranquillity of the one and serenely look at the coming and going of the many. (Book V.)

As is seen here, the Kwanyintze is filled with the Mahâyâna Buddhist thoughts which held sway over the Chinese minds during the Sung dynasty, when almost all notable thinkers of the day rapped at the monastery door at one time or another. The justifiable supposition, therefore, is that the Kwanyintze might have been produced by one of the Buddhist Taoists of those days, especially when we know that the book is ostensibly declared to have then been recovered, though its existence was known during the Han dynasty (B. C. 206—A. D. 23).

I shall conclude the mention of this Taoist philosopher by quoting the following passage, in which the gist of the Taoist mode of thinking is very clearly enunciated, though there is here an unmistakable trace of the Hindu pantheistic speculation.

"It is one Essence (*ching*)[59] that becomes the cold in heaven, the water on earth, and the essence (*ching*) in man. It is one Spirit (*shên*)[60] that becomes the heat in heaven, the fire on earth, and the spirit (*shên*) in man. It is one Animal Soul (*po*)[61] that becomes the drought in heaven, the metal on earth, and the animal soul (*po*) in

[59] 精 [60] 神 [61] 魄 [62] 魂

man. It is one Soul (*hun*)[62] that becomes the wind in heaven, the wood on earth, and the soul (*hun*) in man.

"Let my essence be merged in the essence of heaven and earth and all things, as all different waters could be combined and made into one water.

"Let my spirit be merged in the spirit of heaven and earth and all things, as all different fires could be united and made into one fire.

"Let my animal soul be merged in the animal soul of heaven and earth and all things, as all different metals could be melted and made into one metal.

"Let my soul be merged in the soul of heaven and earth and all things, as one tree could be grafted on another and made into one tree.

"It is thus that heaven and earth and all things are no more than my essence, my spirit, my animal soul, my soul. There is nothing that dies, there is nothing that is born." (Book IV.)

"To the wise there is one mind, one substance, one reason (*tao*), and these three are conceived in their oneness. Therefore, they do not repress the not-one with the one, nor do they injure the one with the not-one." (Bk. I.)

"To illustrate, such changes as cold, heat, warm and cool are like those in a brick: when it is placed in fire it is hot, when put in water it is cold; blow a breath on it, and it is warm; draw a breath from it and it is cool. Only its outward influences are coming and going, while the brick itself knows neither coming nor going. To illustrate, again: see the shadows cast in the water, they come and go, but the water itself knows no coming nor going." (Book II.)

"All things change, but their nature (*ch'i*)[63] is always one. The wise know this oneness of things and are never disturbed by outward signs. Our hair and nails are grow-

[63] 氣

ing every minute, but the multitude of people recognize the fact only when they become visible, they fail to know it through its potential signs. For this reason they think things change, and are born and die, while the wise look at them through their inner signs and know that there is no change whatever in their ultimate issuance." (Book VII.)

"To illustrate, in the great ocean, there are millions of millions of fishes large and small; but only one body of water. I and this external world with its multitudinousness are existing in the midst of Great Evolution, but their essence is one. To him who knows the oneness of essence, there are neither men, nor death, nor life, nor I. The reasoning of this world may turn the true into the untrue, and the untrue into the true; and again, it may make enemies of friends and friends of enemies. Therefore, the wise, abiding in the eternality of things, think of their changeability." (Book VII.)

DAISETZ TEITARO SUZUKI.

LA SALLE, ILLINOIS.

THE FRAGMENTS OF EMPEDOCLES.[1]

ON NATURE.

To His Friend.

1.

Hear thou, Pausanias, son of wise Anchitus!

Limitations of Knowledge.

2.

For narrow through their members scattered ways
Of knowing lie. And many a vile surprise
Blunts soul and keen desire. And having viewed
Their little share of life, with briefest fates,
Like smoke they are lifted up and flit away,
Believing only what each chances on,
Hither and thither driven; yet they boast
The larger vision of the whole and all.
But thuswise never shall these things be seen,
Never be heard by men, nor seized by mind;
And thou, since hither now withdrawn apart,
Shalt learn—no more than mortal ken may span.

3.

Shelter these teachings in thine own mute breast.

4.

But turn their madness, Gods! from tongue of mine,
And drain through holy lips the well-spring clear!
And many-wooed, O white-armed Maiden-Muse,
Thee I approach: O drive and send to me
Meek Piety's well-reined chariot of song,

[1] ased on Diels's text of 1906. This translation will appear shortly in orm with notes and introduction.

So far as lawful is for men to hear,
Whose lives are but a day. Nor shall desire
To pluck the flowers of fame and wide report
Among mankind impel thee on to dare
Speech beyond holy bound and seat profane
Upon those topmost pinnacles of Truth.
But come, by every way of knowing see
How each thing is revealed. Nor, having sight,
Trust sight no more than hearing will bear out,
Trust echoing ear but after tasting tongue;
Nor check the proof of all thy members aught:
Note by all ways each thing as 'tis revealed.

5.

Yea, but the base distrust the High and Strong;
Yet know the pledges that our Muse will urge,
When once her words be sifted through thy soul.

The Elements.

6.

And first the fourfold root of all things hear!—
White gleaming Zeus, life-bringing Here, Dis,
And Nestis whose tears bedew mortality.

7.

The uncreated elements.

Birth and Death.

8.

More will I tell thee too: there is no birth
Of all things mortal, nor end in ruinous death;
But mingling only and interchange of mixed
There is, and birth is but its name with men.

9.

But when in man, wild beast, or bird, or bush,
These elements commingle and arrive
The realms of light, the thoughtless deem it "birth"
When they dispart, 'tis "doom of death;" and though
Not this the Law, I too assent to use.

10.

Avenging Death.

Ex nihilo nihil.

11.

Fools! for their thoughts are briefly brooded o'er
Who trust that what is not can e'er become,
Or aught that is can wholly die away.

12.

From what-is-not what-is can ne'er become;
So that what-is should e'er be all destroyed,
No force could compass and no ear hath heard—
For there 'twill be forever where 'tis set.

The Plenum.

13.

The All hath neither Void nor Overflow.

14.

But with the All there is no Void, so whence
Could aught of more come nigh?

Our Elements Immortal.

15.

No wise man dreams such folly in his heart,
That only whilst we live what men call life
We have our being and take our good and ill,
And ere as mortals we compacted be,
And when as mortals we be loosed apart,
We are as nothing.

Love and Hate, the Everlasting.

16.

For even as Love and Hate were strong of yore,
They shall have their hereafter; nor I think
Shall endless Age be emptied of these Twain.

The Cosmic Process.

17.

I will report a twofold truth. Now grows
The One from Many into being, now
Even from the One disparting come the Many.
Twofold the birth, twofold the death of things:

For, now, the meeting of the Many brings
To birth and death; and, now, whatever grew
From out their sundering, flies apart and dies.
And this long interchange shall never end.
Whiles into One do all through Love unite;
Whiles too the same are rent through hate of Strife.
And in so far as is the One still wont
To grow from Many, and the Many, again,
Spring from primeval scattering of the One,
So far have they a birth and mortal date;
And in so far as the long interchange
Ends not, so far forever established gods
Around the circle of the world they move.
But come! but hear my words! For knowledge gained
Makes strong thy soul. For as before I spake,
Naming the utter goal of these my words,
I will report a twofold truth. Now grows
The One from Many into being, now
Even from the One disparting come the Many,—
Fire, Water, Earth and awful heights of Air;
And shut from them apart, the deadly Strife
In equipoise, and Love within their midst
In all her being in length and breadth the same.
Behold her now with mind, and sit not there
With eyes astonished, for 'tis she inborn
Abides established in the limbs of men.
Through her they cherish thoughts of love, through her
Perfect the works of concord, calling her
By name Delight or Aphrodite clear.
She speeds revolving in the elements,
But this no mortal man hath ever learned—
Hear thou the undelusive course of proof:
Behold those elements own equal strength
And equal origin; each rules its task;
And unto each its primal mode; and each
Prevailing conquers with revolving time.
And more than these there is no birth nor end;
For were they wasted ever and evermore,
They were no longer, and the great All were then
How to be plenished and from what far coast?
And how, besides, might they to ruin come,

Since nothing lives that empty is of them?—
No, these are all, and, as they course along
Through one another, now this, now that is born—
And so forever down Eternity.

18.

Love.

19.

Firm-clasping Lovingness.

Love and Hate in the Organic World.

20.

The world-wide warfare of the eternal Two
Well in the mass of human limbs is shown:
Whiles into one do they through Love unite,
And mortal members take the body's form,
And life doth flower at the prime; and whiles,
Again dissevered by the Hates perverse,
They wander far and wide and up and down
The surf-swept beaches and drear shores of life.
So too with thicket, tree, and gleaming fish
Housed in the crystal walls of waters wide;
And so with beasts that couch on mountain slopes,
And water-fowls that skim the long blue sea.

From the Elements is All We See.

21

But come, and to my words foresaid look well,
If their wide witness anywhere forgot
Aught that behooves the elemental forms:
Behold the Sun, the warm, the bright-diffused;
Behold the eternal Stars, forever steeped
In liquid heat and glowing radiance; see
Also the Rain, obscure and cold and dark,
And how from Earth streams forth the Green and Firm.
And all through Wrath are split to shapes diverse;
And each through Love draws near and yearns for each.
For from these elements hath budded all
That was or is or evermore shall be—
All trees, and men and women, beasts and birds,
And fishes nourished in deep waters, aye,

The long-lived gods, in honors excellent.
For these are all, and, as they course along
Through one another, they take new faces all,
By varied mingling and enduring change.

Similia similibus.

22.

For amber Sun and Earth and Heaven and Sea
Is friendly with its every part that springs.
Far driven and scattered, in the mortal world;
So too those things that are most apt to mix
Are like, and love by Aphrodite's hest.
But hostile chiefly are those things which most
From one another differ, both in birth,
And in their mixing and their molded forms—
Unwont to mingle, miserable and lone,
After the counsels of their father, Hate.

An Analogy.

23.

And even as artists—men who know their craft
Through wits of cunning—paint with streak and hue
Bright temple-tablets, and will seize in hand
The oozy poisons pied and red and gold
(Mixing harmonious, now more, now less),
From which they fashion forms innumerable,
And like to all things, peopling a fresh world
With trees, and men and women, beasts and birds,
And fishes nourished in deep waters, aye,
And long-lived gods in honors excellent:
Just so (and let no guile deceive thy breast),
Even so the spring of mortal things, leastwise
Of all the host born visible to man.
O guard this knowledge well, for thou hast heard
In this my song the Goddess and her tale.

The Speculative Thinker.

24.

To join together diverse peaks of thought,
And not complete one road that has no turn.

An Aphorism.

25.

What must be said, may well be said twice o'er.

The Law of the Elements.

26.

In turn they conquer as the cycles roll,
And wane the one to other still, and wax
The one to other in turn by olden Fate;
For these are all, and, as they course along
Through one another, they become both men
And multitudinous tribes of hairy beasts;
Whiles in fair order through Love united all,
Whiles rent asunder by the hate of Strife,
Till they, when grown into the One and All
Once more, once more go under and succomb.
And in so far as is the One still wont
To grow from Many, and the Many, again,
Spring from primeval scattering of the One,
So far have they a birth and mortal date.
And in so far as this long interchange
Ends not, so far forever established gods
Around the circle of the world they move.

The Sphere.

27.

There views one not the swift limbs of the Sun,
Nor there the strength of shaggy Earth, nor Sea;
But in the strong recess of Harmony,
Established firm abides the rounded Sphere,
Exultant in surrounding solitude.

27a.

Nor faction nor fight unseemly in its limbs.

28.

The Sphere on every side the boundless same,
Exultant in surrounding solitude.

29.

For from its back there swing no branching arms,
It hath no feet nor knees alert, nor form

Of life-producing member,—on all sides
A sphere it was, and like unto itself.

30.

Yet after mighty Strife had waxen great
Within the members of the Sphere, and rose
To her own honors, as the times arrived
Which unto each in turn, to Strife, to Love,
Should come by amplest oath and old decree...

31.

For one by one did quake the limbs of God.

Physical Analogies.

32.

The joint binds two.

33.

But as when rennet of the fig-tree juice
Curdles the white milk, and will bind it fast...

34.

Cementing meal with water...

The Conquest of Love.

35.

But hurrying back, I now will make return
To paths of festal song, laid down before,
Draining each flowing thought from flowing thought.
When down the Vortex to the last abyss
Had foundered Hate, and Lovingness had reached
The eddying center of the Mass, behold
Around her into Oneness gathered all.
Yet not a-sudden, but only as willingly
Each from its several region joined with each;
And from their mingling thence are poured abroad
The multitudinous tribes of mortal things.
Yet much unmixed among the mixed remained,
As much as Hate still held in scales aloft.
For not all blameless did Hate yield and stand
Out yonder on the circle's utmost bounds;
But partwise yet within he stayed, partwise
Was he already from the members gone.

And ever the more he skulked away and fled,
Then ever the more, and nearer, inward pressed
The gentle minded, the divine Desire
Of blameless Lovingness. Thence grew apace
Those mortal Things, erstwhile long wont to be
Immortal, and the erstwhile pure and sheer
Were mixed, exchanging highways of new life,
And from their mingling thence are poured abroad
The multitudinous tribes of mortal things,
Knit in all forms and wonderful to see.

36.

And as they came together, Hate began
To take his stand far on the outer verge.

Similia similibus.

37.

And Earth through Earth her figure magnifies,
And Air through Air.

The World as It Now Is.

38.

Come! I will name the like-primeval Four,
Whence rose to sight all things we now behold—
Earth, many-billowed Sea, and the moist Air,
And Aether, the Titan, who binds the globe about.

Earth and Air Not Illimitable.

39.

If Earth's black deeps were endless, and o'er-full
Were the white Ether, as forsooth some tongues
Have idly prated in the babbling mouths
Of those who little of the All have seen...

Sun and Moon.

40.

Keen-darting Helios and Selene mild.

41.

But the sun's fires, together gathered, move
Attendant round the mighty space of heaven.

42.

And the sun's beams
The moon, in passing under, covers o'er,
And darkens a bleak tract of earth as large
As is the breadth of her, the silver-eyed.

43.

As sunbeam striking on the moon's broad disk.

44.

Toward Olympos back he darts his beams,
With fearless face.

45.

Round earth revolves a disk of alien light.

46.

Even as revolves a chariot's nave, which round
The outmost...

47.

For toward the sacred circle of her lord
She gazes face to face.

48.

But earth makes night for beams of sinking sun.

The Darkling Night.

49.

Of night, the lonely, with her sightless eyes.

Wind and Rain.

50.

Iris from sea brings wind or mighty rain.

Fire.

51.

And fire sprang upward with a rending speed.

The Volcano.

52.

And many a fire there burns beneath the ground.

Air.

53.

For sometimes so upon its course it met,
And ofttimes otherwise.

Things Passing Strange.

54.

In Earth sank Ether with deep-stretching roots.

55.

Earth's sweat, the sea.

56.

The salt grew solid, smit by beams of sun.

Strange Creatures of Olden Times.

57.

There budded many a head without a neck,
And arms were roaming, shoulderless and bare,
And eyes that wanted foreheads drifted by.

58.

In isolation wandered every limb,
Hither and thither seeking union meet.

59.

But now as God with God was mingled more,
These members fell together where they met,
And many a birth besides was then begot
In a long line of ever varied life.

60.

Creatures of countless hands and trailing feet.

61.

Many were born with twofold brow and breast,
Some with the face of man on bovine stock,
Some with man's form beneath a bovine head,
Mixed shapes of being with shadowed secret parts,
Sometimes like men, and sometimes woman-growths.

62.

But come! now hear how 'twas the sundered Fire
Led into life the germs, erst whelmed in night,

Of men and women, the pitied and bewailed;
For 'tis a tale that sees and knows its mark.
First rose mere lumps of earth with rude impress,
That had their shares of Water and of Warm.
These then by Fire (in upward zeal to reach
Its kindred Fire in heaven) were shot aloft,
Albeit not yet had they revealed a form
Of lovely limbs, nor yet a human cry,
Nor secret member, common to the male.

The Process of Human Generation To-day.

63.

But separate is the birth of human limbs;
For 'tis in part in man's...

64.

Love-longing comes, reminding him who sees.

65.

Into clean wombs the seeds are poured, and when
Therein they meet with Cold, the birth is girls;
And boys, when contrariwise they meet with Warm.

66.

Into the cloven meads of Aphrodite.

67.

For bellies with the warmer wombs become
Mothers of boys, and therefore men are dark,
More stalwart and more shaggy.

68.

On the tenth day, in month the eighth, the blood
Becomes white pus.

69.

Twice bearing.

70.

Sheepskin.

On Animals and Plants.

71.

And if belief lack pith, and thou still doubt
How from the mingling of the elements,

The Earth and Water, the Ether and the Sun,
So many forms and hues of mortal things
Could thus have being, as have come to be,
Each framed and knit by Aphrodite's power...

72.

As the tall trees and fish in briny floods.

73.

As Kypris, after watering Earth with Rain,
Zealous to heat her, then did give Earth o'er
To speed of Fire that then she might grow firm.

74.

Leading the songless shoals of spawning fish.

75.

Of beasts, inside compact with outsides loose,
Which, in the palms of Aphrodite shaped,
Got this their sponginess.

76.

'Tis thus with conchs upon the heavy chines
Of ocean-dwellers, aye, of shell-fish wreathed,
Or stony-hided turtles, where thou mark'st
The earthen crust outside the softer parts.

77-78.

Trees bore perennial fruit, perennial fronds,
Laden with fruit the whole revolving year,
Since fed forever by a fruitful air.

79.

Thus first tall olives lay their yellow eggs.

80.

Wherefore pomegranates slow in ripening be,
And apples grow so plentiful in juice.

81.

Wine is but water fermented in the wood,
And issues from the rind.

82.

From the same stuff on sturdy limbs grow hair,
Leaves, scales of fish, and birds' thick-feathered plumes.

83.

Stiff hairs, keen-piercing, bristle on the chines
Of hedge-hogs.

Our Eyes.

84.

As when a man, about to sally forth,
Prepares a light and kindles him a blaze
Of flaming fire against the wintry night,
In horny lantern shielding from all winds;
Though it protect from breath of blowing winds,
Its beam darts outward, as more fine and thin,
And with untiring rays lights up the sky:
Just so the Fire primeval once lay hid
In the round pupil of the eye, enclosed
In films and gauzy veils, which through and through
Were pierced with pores divinely fashionèd,
And thus kept off the watery deeps around,
Whilst Fire burst outward, as more fine and thin.

85.

The gentle flame of eye did chance to get
Only a little of the earthen part.

86.

From which by Aphrodite, the divine,
The untiring eyes were formed.

87.

Thus Aphrodite wrought with bolts of love.

88.

One vision of two eyes is born.

Similia similibus.

89.

Knowing that all things have their emanations.

90.

Thus Sweet seized Sweet, Bitter on Bitter flew,
Sour sprung for Sour, and upon Hot rode Hot.

91.

Water to wine more nearly is allied,
But will not mix with oil.

92.

As when one mixes with the copper tin.

93.

With flax is mixed the silvery elder's seed.

The Black River Bottoms.

94.

And the black color of the river's deeps
Comes all from shade; and one may see the same
In hollow caves.

Eyes.

95.

As, in the palms of Kypris shaped, they first
Began to grow together...

Bones.

96.

Kind Earth for her broad-breasted melting-pots,
Of the eight parts got two of Lucid Nestis,
And of Hephæstos four. Thence came white bones,
Divinely joined by glue of Harmony.

97.

The back-bone.

Blood and Flesh.

98.

And after Earth within the perfect ports
Of Aphrodite anchored lay, she met
Almost in equal parts Hephæstos red,
And Rain and Ether, the all-splendorous
(Though one or other were a little more,
Perchance, a little less, than Earth). From these
There came our blood and all the shapes of flesh.

The Ear.

99.

A bell... a fleshy twig.

The Rushing Blood and the Clepsydra.

100.

And thus does all breathe in and out. In all,
Over the body's surface, bloodless tubes
Of flesh are stretched, and, at their outlets, rifts
Innumerable along the outmost rind
Are bored; and so the blood remains within;
For air, however, is cut a passage free.
And when from here the thin blood backward streams,
The air comes rushing in with roaring swell;
But when again it forward leaps, the air
In turn breathes out; as when a little girl
Plays with a water-clock of gleaming bronze:
As long as ever the opening of the pipe
Is by her pretty fingers stopped and closed,
And thuswise plunged within the yielding mass
Of silvery water, can the Wet no more
Get in the vessel; but the air's own weight,
That falls inside against the countless holes,
Keeps it in check, until the child at last
Uncovers and sets free the thickened air,
When of a truth the water's destined bulk
Gets in, as air gives way. Even so it is,
When in the belly of the brazen clock
The water lies, and the girl's finger tip
Shuts pipe and tube: the air, that from without
Comes pressing inward, holds the water back
About the gateways of the gurgling neck,
As the child keeps possession of the top,
Until her hand will loosen, when amain—
Quite contrariwise to way and wise before—
Pours out and under the water's destined bulk,
As air drops down and in. Even so it is
With the thin blood that through our members drive
When hurrying back it streams to inward, then
Amain a flow of air comes rushing on:
But when again it forward leaps, the air
In turn breathes out along the selfsame way.

Scent.

101.

Sniffing with nostrils mites from wild beasts' limbs...
Left by their feet along the tender grass...

102.

And thus got all things share of breath and smells.

On the Psychic Life.

103.

Thus all things think their thought by will of Chance.

104.

And in so far the lightest at their fall
Do strike together...

105.

In the blood-streams, back-leaping unto it,
The heart is nourished, where prevails the power
That men call thought; for lo the blood that stirs
About the heart is man's controlling thought.

106.

For unto men their thrift of reason grows,
According to the body's thrift and state.

107.

For as of these commingled all things are,
Even so through these men think, rejoice, or grieve.

108.

As far as mortals change by day, so far
By night their thinking changes...

109.

For 'tis through Earth that Earth we do behold,
Through Ether, divine Ether luminous,
Through Water, Water, through Fire, devouring Fire,
And Love through Love, and Hate through doleful Hate.

110.

For if reliant on a spirit firm,
With inclination and endeavor pure,

Thou wilt behold them, all these things shall be
Forever thine, for service, and besides
Thereof full many another shalt thou gain;
For of themselves into that core they grow
Of each man's nature, where his essence lies.
But if for others thou wilt look and reach—
Such empty treasures, myriad and vile,
As men be after, which forevermore
Blunt soul and keen desire—O then shall these
Most swiftly leave thee as the seasons roll;
For all their yearning is a quick return
Unto their own primeval stock. For know:
All things have fixed intent and share of thought.

Dominion.

III.

And thou shalt master every drug that e'er
Was made defense 'gainst sickness and old age—
For thee alone all this I will fulfil—
And thou shalt calm the might of tireless winds,
That burst on earth and ruin seedlands; aye,
And if thou wilt, shalt thou arouse the blasts,
And watch them take their vengeance, wild and shril
For that before thou cowedst them. Thou shalt chang
Black rain to drought, at seasons good for men,
And the long drought of summer shalt thou change
To torrents, nourishing the mountain trees,
As down they stream from ether. And thou shalt
From Hades beckon the might of perished men.

THE PURIFICATIONS.

The Healer and Prophet.

112.

Ye friends, who in the mighty city dwell
Along the yellow Acragas hard by
The Acropolis, ye stewards of good works,
The stranger's refuge venerable and kind,
All hail, O friends! But unto ye I walk
As god immortal now, no more as man,
On all sides honored fittingly and well,

Crowned both with fillets and with flowering wreaths.
When with my throngs of men and women I come
To thriving cities, I am sought by prayers,
And thousands follow me that they may ask
The path to weal and vantage, craving some
For oracles, whilst others seek to hear
A healing word 'gainst many a foul disease
That all too long hath pierced with grievous pains.

113.

Yet why urge more, as if forsooth I wrought
Some big affair—do I not far excel
The mortals round me, doomed to many deaths!

114.

O friends, I know indeed in these the words
Which I will speak that very truth abides;
But greatly troublous unto men alway
Hath been the emulous struggle of Belief
To reach their bosoms.

Expiation and Metempsychosis.

115.

There is a word of Fate, an old decree
And everlasting of the gods, made fast
With amplest oaths, that whosoe'er of those
Far spirits, with their lot of age-long life,
Do foul their limbs with slaughter in offense,
Or swear forsworn, as failing of their pledge,
Shall wander thrice ten thousand weary years
Far from the Blessed, and be born through time
In various shapes of mortal kind, which change
Ever and ever paths of troublous life:
For now Air hunts them onward to the Sea;
Now the wild Sea disgorges them on Land;
Now Earth will spue toward beams of radiant Sun;
Whence he will toss them back to whirling Air—
Each gets from other what they all abhor.
And in that brood I too am numbered now,
A fugitive and vagabond from heaven,
As one obedient unto raving Strife.

116.

Charis abhors intolerable Fate.

117.

For I was once already boy and girl,
Thicket and bird, and mute fish in the waves.

This Earth of Ours.

118.

I wept and wailed, beholding the strange place.

119.

From what large honor and what height of bliss
Am I here fallen to move with mortal kind!

This Sky-Roofed World.

120.

And then we came unto a roofèd cave.

This Vale of Tears.

121.

A joyless land,
Where Slaughter and Grudge, and troops of Dooms besides,
Where shriveled Diseases and obscene Decays,
And Labors, burdened with the water-jars,
Do wander down the dismal meads of Bane.

122.

There was Earth-mother,
There the far-peering Virgin of the Sun,
And bloody Quarrel and grave-eyed Harmony,
And there was Fair and Foul and Speed and Late,
Black-haired Confusion and sweet maiden Sure.

123.

Growth and Decay, and Sleep and Roused-from-sleep,
Action and Rest, and Glory many-crowned,
And Filth, and Silence and prevailing Voice.

124.

O mortal kind! O ye poor sons of grief!
From such contentions and such sighings sprung!

The Changing Forms.

125.

For from the living he the dead did make,
Their forms exchanging...

126.

All things doth Nature change, enwrapping souls
In unfamiliar tunics of the flesh.

127.

The worthiest dwellings for the souls of men,
When 'tis their lot to live in forms of brutes,
Are tawny lions, those great beasts that sleep
Couched on the black earth up the mountain side;
But, when in forms of beautiful plumed trees
They live, the bays are worthiest for souls.

The Golden Age.

128.

Nor unto them
Was any Ares god, nor Kydoimos,
Nor Zeus, the king of gods, nor Kronos, nor
Poseidon then, but only Kypris queen...
Whom they with holy gifts were wont to appease,
With painted images of living things,
With costly unguents of rich fragrancy,
With gentle sacrifice of taintless myrrh,
With redolent fumes of frankincense, of old
Pouring libations out upon the ground
Of yellow honey; not then with unmixed blood
Of many bulls was ever an altar stained;
But among men 'twas sacrilege most vile
To reave of life and eat the goodly limbs.

The Sage.

129.

Was one among them there, a supreme man
Of vastest knowledge, gainer of large wealth
Of understanding, and chief master wise
Of diverse works of skill and wisdom all;
For whensoe'er he sought with scope and reach

Of understanding, then 'twas his to view
Readily each and every thing that e'er
In ten or twenty human ages throve.

Those days.

130.

All things were tame, and gentle toward men,
All beasts and birds, and friendship's flame blew fair

The Divine.

131.

For since, O Muse undying, thou couldst deign
To give for these our paltry human cares
A gateway to thy soul, O now much more,
Kalliope of the beautiful dear voice,
Be near me now beseeching!—whilst I speak
Excelling thoughts about the blessed gods.

132.

O well with him who hath secured his wealth
Of thoughts divine, O wretched he whose care
Is shadowy speculation on the gods!

133.

We may not bring It near us with our eyes,
We may not grasp It with our human hands,
With neither hands nor eyes, those highways twain
Whereby Belief drops into minds of men.

134.

For 'tis adorned with never a manlike head,
For from Its back there swing no branching arms,
It hath no feet nor knees alert, nor form
Of tufted secret member; but It lives,
One holy mind, ineffable, alone,
And with swift thoughts darts through the universe.

135.

But the wide law of all extends throughout
Broad-ruling ether and the vast white sky.

Animal Sacrifice.

136.

Will ye not cease from this great din of slaughter?
Will ye not see, unthinking as ye are,
How ye rend one another unbeknown?

137.

The father lifteth for the stroke of death
His own dear son within a changèd form,
And slits his throat for sacrifice with prayers—
A blinded fool! But the poor victims press,
Imploring their destroyers. Yet not one
But still is deaf to piteous moan and wail.
Each slits the throat and in his halls prepares
A horrible repast. Thus too the son
Seizes the father, children the mother seize,
And reave of life and eat their own dear flesh.

138.

Drawing the soul as water with the bronze.

139.

Ah woe is me! that never a pitiless day
Destroyed me long ago, ere yet my lips
Did meditate this feeding's monstrous crime!

Taboos.

140.

Withhold your hands from leaves of Phœbus' tree!

141.

Ye wretched, O ye altogether wretched,
Withhold your hands from beans!

Sin.

142.

Neither roofed halls of ægis-holding Zeus
Delight it, nor dire Hecate's venging house.

143.

Scooping from fountains five with lasting bronze.

144.

O fast from evil-doing.

145.

Since wildered by your evil-doings huge,
Ne'er shall ye free your life from heavy pains.

The Progression of Rebirth.

146.

And seers at last, and singers of high hymns,
Physicians sage, and chiefs o'er earth-born men
Shall they become, whence germinate the gods,
The excellent in honors.

147.

At hearth and feast companioned with the immortals,
From human pains and wasting eld immune.

Last Echoes of a Song Half Lost.

148.

Man-enfolding Earth.

149.

The cloud-collecting.

150.

The blood-full liver.

151.

Life-giving.

152.

Evening, the day's old age.

153.

The belly.

153a.

In seven times seven days.

WILLIAM ELLERY LEONARD.

MADISON, WIS.

BOOK REVIEWS AND NOTES.

HE DYNAMICS OF LIVING MATTER. By *Jacques Loeb*. New York: Macmillan, 1906. Pp. 233. Price, $3.00 net.

In the year 1902 Professor Loeb was called to Columbia University to eliver a series of eight lectures on the dynamics of living matter, and this ries now lies before us in book form as Vol. VIII of the Columbia Uniersity Biological Series. Professor Loeb says:

"In these lectures we shall consider living organisms as chemical maines, consisting essentially of colloidal material, which possess the peculiares of automatically developing, preserving, and reproducing themselves. ıe fact that the machines which can be created by man do not possess the wer of automatic development, self-preservation, and reproduction contutes for the present a fundamental difference between living machines and tificial machines. We must, however, admit that nothing contradicts the ssibility that the artificial production of living matter may one day be acmplished. It is the purpose of these lectures to state to what extent we are le to control the phenomena of development, self-preservation, and reproıction."

Professor Loeb incorporates or at least alludes to his prior work which s brought him prominently before the public, and he discusses the dynamics life in the following chapters: Concerning the General Chemistry of Life ıenomena, The General Physical Constitution of Living Matter, On Some ıysical Manifestations of Life, The Rôle of Elecrolytes in the Formation ıd Preservation of Living Matter, The Effects of Heat and Radiant Energy pon Living Matter, Heliotropism, Further Facts Concerning Tropisms and elated Phenomena, Fertilization, Heredity, On the Dynamics of Regenerative rocesses.

Professor Loeb excludes from the present volume those actions of animals ıich are executed consciously because he discusses them in a special book, ıt he refers to the purely psychic phenomena in these words:

"I consider consciousness the function of a definite machine or mechanm, which we may call the mechanism of associative memory. Whatever e nature of this machine may be it has one essential feature in common ith the phonograph, namely, that it reproduces impressions in the same ronological order as that in which they were received. The mechanism associative memory seems to be located—in vertebrates—in the cerebral emispheres. It follows from the experiments of Goltz that one of the two emispheres is sufficient for all the phenomena of memory and consciousness.

As far as the chemical or physical mechanism of memory is concerned, we have at present only a few vague data. H. Meyer and Overton have pointed out that substances which are easily soluble in fat are also, for the most part, strong anæsthetics, e. g., ether, chloroform, etc., and that the ganglionic cells are especially rich in lipoids. It is possible that the mechanism of associative memory depends in part upon the properties and activities of the fatty constituents of the cerebral hemispheres. Another fact which may be of importance is the observation of Speck that if the partial pressure of oxygen in the air is lowered to below one third of its normal value, the fundament of mental activity, namely, memory, is almost instantly interfered with, and total loss of consciousness rapidly follows."

HARVARD ORIENTAL SERIES. Vols. VII-VIII. — ATHARVA-VEDA SAMHITA. Translated with a Critical and Exegetical Commentary by *William Dwight Whitney*. Revised and brought nearer to completion and edited by *Charles Rockwell Lanman*.

Vol. IX. THE LITTLE CLAY CART. Attributed to *King Shudraka* and translated into English prose and verse by *Arthur William Ryder*. Cambridge: Harvard University 1905.

The Atharva-Veda is one of the most ancient and venerable collections of Brahman lore that has come down to us. It contains incantations, hymns, exorcisms for all possible purposes, and thus forms an important landmark in the development of religion. An elegant birch bark manuscript has been found in Kashmir, which is now in possession of the University of Tübingen, and was edited as an edition de luxe several years ago by the Professors Richard Garbe and Maurice Bloomfield. A translation into German was made some time ago by Professor Weber in *Indische Studien*, Vol. IV, 1858, pp. 393 to 430. The present translation, the first one into English, is the work of the late Whitney, which has been edited and in some unfinished portions brought to completion by Professor Lanman. Professor Roth was the first to understand the significance of this ancient work, and he inspired his disciple Whitney to undertake a translation which he had almost completed, when death prevented him from giving the finishing touches to it. So the work of bringing it before the public was left to Professor Whitney's disciple and friend, Charles R. Lanman, and it could not have been put in better hands. He has not only faithfully attended to the labor of making the manuscript ready for publication, but has revised and added and brought up to date those parts of the material which had been left incomplete, and work has been done with reverence and love for the master at whose feet he had sat. A Sanskrit poem at the end of the preface bears testimony to the spirit which animated Lanman. Thus this stupendous work becomes a monument not only to ancient religion but also to true scholarship, and the editor gives expression to his feelings in the following words and verses:

"Had Whitney lived to see this work in print and to write the preface, his chief tribute of grateful acknowledgement would doubtless have been to his illustrious preceptor and colleague and friend whose toil had so largely increased its value, to Rudolph Roth of Tübingen. Whitney, who was my teacher, and Roth, who was my teacher's teacher and my own teacher, both are passed away, and Death has given the work to me to finish, or rather to

ing nearer to an ideal and so unattainable completeness. They are beyond the ach of human thanks, of praise or blame: but I cannot help feeling that even their life-time they understood that science is concerned only with results, t with personalities, or (in Hindu phrase) that the goddess of learning, rasvati or Vac, cares not to ask even so much as the names of her votaries; d that the unending progress of science is indeed like the endless flow of river.

"Teacher and teacher's teacher long had wrought
Upon these tomes of ancient Hindu lore,
Till Death did give to one whom both had taught
The task to finish, when they were no more.

. . . . . .

"The Gita's lesson had our Whitney learned—
To do for duty, not for duty's meed.
And, paid or unpaid be the thanks he earned,
The thanks he recked not, recked alone the deed.

"Here stands his book, a mighty instrument,
Which those to come may use for large emprise.
Use it, O scholar, ere thy day be spent.
The learner dieth, Learning never dies."

The Atharva-Veda itself consists of prayers which are intended as incantations to overcome all kinds of evils that threaten man's destiny. From the rich collection we will select one to serve us as an example. In book III, page 30, we read a prayer for concord, which, omitting all commentaries' notes and explanations of the text, reads as follows:

"Like-heartedness, like-mindedness, non-hostility do I make for you; do ye show affection the one toward the other, as the inviolable [cow] toward her calf when born.

"Be the son submissive to the father, like-minded with the mother; let the wife to the husband speak words full of honey, wealful.

"Let not brother hate brother, nor sister, sister; becoming accordant, of like courses, speak ye words auspiciously.

"Having superiors, intentful, be ye not divided, accomplishing together, moving on with joint labor; come hither speaking what is agreeable one to another; I make you united, like-minded.

"Your drinking be the same, in common your share of food; in the same harness do I join you together; worship ye Agni united, like spokes about a nave.

"United, like-minded I make you, of one bunch, all of you, by conciliation; like the gods defending immortality; late and early be well-willing yours."

The first volume (viz., Vol. VII, of the *Harvard Oriental Series*) contains as a frontispiece a fine medallion portrait of Professor Whitney while the second volume (Volume VIII of the *Harvard Oriental Series*) contains a facsimile of a page of the Kashmirian Codex.

Besides the editor's preface the reader is furnished with a brief sketch of Professor Whitney's life and a list of his works.

The critical notes leave nothing to be desired and there is no question that the Sanskrit scholar will find the edition most serviceable for all purposes.

Volume IX of the *Harvard Oriental Series* contains the interesting translation of a Hindu drama by Arthur W. Rider, entitled "The Little Clay Cart," and consisting of ten acts. Professor Lanman calls attention in an editor's note to the importance of Eastern civilization and our necessity of familiarizing ourselves with it. He points out how Japan has been benefited by having studied Western civilization, whereby she has grown not only in intellectual capacity but also in practical achievements both in peace and in war. Professor Lanman says:

"The fruitfulness of those scions of Western civilization which the Japanese have grafted upon their own stock is to-day the admiration of the world. In our wonder, let us not forget that that stock is the growth of centuries, and that it is rooted in a soil of racial character informed by ethical ideals which we are wont to regard, with arrogant self-complacency, as exclusively proper to Christianity, but which were, in fact, inculcated twenty-four centuries ago through precept and example by Gotama the Enlightened, or, as the Hindus call him, Gotama the Buddha. It has often been said that India has never influenced the development of humanity as a whole. Be that as it may, it now seems no less probable than strange that she is yet destined to do so, on the one hand, indirectly, through the influence of Indian Buddhism upon Japan, and, on the other, directly, by the diffusion in the West of a knowledge of her sacred writings, especially those of Vedantism and Buddhism. To judge the East aright, we must know not only what she is, but also how she has become what she is; know, in short, some of the principal phases of her spiritual history as they are reflected in her ancient literature, especially that of India. To interpret to the West the thought of the East, to bring her best and noblest achievements to bear upon our life,—that is to-day the problem of Oriental philology."

APPLIED SOCIOLOGY. By *Lester F. Ward*. Boston: Ginn, 1906. Pp. xviii, 384. Price, $3.00 net.

Mr. Ward claims that this "treatise on the conscious improvement of society by society," constitutes with its predecessor *Pure Sociology*, a system of sociology, while those together with his earlier sociological works compose a consistent and comprehensive system of social philosophy. The main implication of the entire system is "a true science of society, capable in the measure that it approaches completeness, of being turned to the profit of mankind.... It aims to point out a remedy for the general paralysis that is creeping over the world, and which a too narrow conception of the law of cosmic evolution serves rather to increase than to diminish. It proclaims the efficacy of effort provided it is guided by intelligence."

This particular portion of Mr. Ward's system of sociology is divided into three parts. The first part, "Movement," begins with a definitive chapter on the relation of pure to applied sociology followed by one on "The Efficacy of Effort," which proves the fallacy of the *laissez faire* school. Then the author treats of the "End or Purpose of Sociology," "Social Achievement,"

istoric "World Views" and their interpretation, "Truth and Error," includ-
ıg anthropomorphic views, and the "Social Appropriation of Truth."

The second part on "Achievement" is devoted chiefly to a discussion of Opportunity" and its logic, treating especially of different kinds of environ-
ıent and their influence.

The third part, "Improvement," after a chapter on the "Reconciliation of .chievement with Improvement," enters in more detail into the methods and roblems of applied sociology.

Appended to this work is a valuable bibliographical list of authors and tles of works, articles, and memoirs quoted or cited in the book with critical nd explanatory notes, and references to the pages where the citations are ıade. A careful and thorough index completes the work.

'HE SUBCONSCIOUS. By *Joseph Jastrow*. Boston and New York: Houghton. Mifflin & C., 1906. Pp. 549. Price, $2.50 net.

The author, professor of psychology at the University of Wisconsin, ex-lains the purpose of his book in the preface as follows:

"The purpose of this essay in descriptive psychology is to provide a sur-ey of a comprehensive aspect of human psychic endowment. The very defi-ition of psychology as the science of consciousness has tended to focus at-ention upon conditions of high introspective lucidity, and, by implication, to ook upon areas upon which such illumination is withdrawn, as quite too ob-curely lighted for profitable examination. Thus casually visited, and with no ital share in the psychologist's concerns, the abode of the subconscious has rifted into the service of a lumber-room, in which to deposit what finds no lace in the mind's active economies. Not mainly as a corrective to unwar-anted misconception,—though quite willing that the work should be thus erviceable,—but as a statement of its natural import, its comprehensive scope n the familiar fields of normal life and in the perplexing mazes of the ab-ormal, I have undertaken a systematic exposition of subconscious func-ioning."

The book has apparently grown out of a course of lectures; but it might e more serviceable to the psychologist if the contents had been condensed o about one-half or even less than one-half its present size. Moreover the uthor enters perhaps too little into the explanation of the functions of the ervous system, and also the mechanism of consciousness.

In addition to these subjects Professor Jastrow discusses in the first part, olition, attention and the rôle which the subconscious plays in mental proce-ure.

The second part is devoted to the abnormal as in dream consciousness nd its variants, dissociated consciousness, and the genesis of altered person-lity as well as disintegrating lapses of personality.

The third or theoretical part discusses the nature of the subconscious and he subconscious as abnormal.

ESSAY ON THE CREATIVE IMAGINATAION. By *Th. Ribot*. Translated from the French by *Albert H. N. Baron*. Chicago: The Open Court Publishing Co., 1906. Pp. 359. Price, $1.75 net. (7s. 6d. net.)

The *Essay on Creative Imagination* by the well-know psychologist Th.

Ribot is the first attempt that has been made to give any adequate scientific treatment to this branch of psychology. Although the purely reproductive imagination has been studied with considerable enthusiasm, the creative or constructive variety has been generally neglected, and is popularly supposed to be confined to esthetic creation.

The author shows that imagination is not the possession only of the inspired few, but is a function of mind common to all men in some degree, and that mankind has displayed as much imagination in practical life as in its more emotional phases—in mechanical, military, industrial and commercial inventions, in religious, social and political institutions as well as in sculpture, painting, poetry and song.

After an introduction on "The Motor Nature of the Constructive Imagination" the book is divided into three parts. The first is an analysis of the imagination and discusses in turn the intellectual, emotional and unconscious factors, the organic conditions of the imagination and the principle of unity. The second part treats of the development of the imagination in animals, the child, primitive man and the various higher forms of invention. The third parts deals with the principal types of imagination, first dividing them into two general classes, the plastic and diffluent, and then specifying the mystic, scientific, practical, commercial, and utopian types. Appendices provide further observations and documents in evidence. The book is provided with a very full analytical table of contents and a comprehensive index.

Webster's International Dictionary in its recently enlarged edition proves itself equal to cope successfully with the danger of becoming a "back number" to which all works of reference are liable. The disadvantage of worn type is obviated by new plates into which also many corrections and improvements are introduced including thousands of new words which represent the new expressions that have come into literary and scientific use, and old ones which have changed in meaning or have been revived. Of the comprehensive series of abridgments each member of which bears the stamp of authority of the whole system, the largest and most important is *Webster's Collegiate Dictionary*. This contains most of the essentials of the larger work including complete definitions and full and scholarly etymologies. Its appendix contains many valuable tables and treatises including a dictionary of mythological characters and a Scottish Glossary which indicates the correct pronunciation of the words and claims to be the most complete and reliable dictionary of Scottish words and phrases accessible. But the publishers have recently issued this same work also on the thin paper used for the publication of Bibles which reduces the bulk to one-half the size, and is sold at practically the same price (limp covers, cloth, $3.50, seal, $5.00). In this form the unwieldy reference book of the library dictionary-stand is reduced to a handy volume for the private desk or traveling-bag with all the major points of value of the large work retained, and at the same time possessing the additional merit of that charm which appeals to both the eye and hand and makes a book a personal friend rather than only an indispensable and reliable servant.

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THE MONIST

THE MODERN THEORY OF ENERGETICS.*

SINCE the middle of the last century when the comprehensive significance of the law of the conservation of energy became generally acknowledged, the conviction has also developed that this law must serve as the foundation of the natural sciences, above all of physics. The realization of this thought, however, though in itself quite obvious, has been retarded by inertia of every kind so that even to-day there is hardly a text-book on physics which seriously undertakes to work out a presentation of the several laws and relations strictly in this sense; and this requirement has been met even in a less degree in other neighboring realms of science.

So closed the nineteenth century, and its greatest discovery was not yet granted the practical recognition and significance to which it justly lays claim. In 1896 at a conference of naturalists in Luebeck I gave a hint of this obligation and necessity in a lecture on the "Triumph of Scientific Materialism" which attracted considerable attention, but could not alter the general condition of affairs. For this it would be necessary to show by means of a survey over the whole realm of science that the concept and the laws of energy really possess the power to unify and to give light which has been ascribed to them, since they direct

* Translated from the German in the opening number of the *Rivista di Scienza* by Lydia Gillingham Robinson.

the attention of investigators to the real problems and exclude pseudo-problems from the discussion. This was done in 1902 in my "Lectures on Natural Philosophy" (*Vorlesungen über Naturphilosophie*).

Since that time the significance of the theory of energy, or energetics, for the general world-conception has come to the consciousness of increasingly wider circles. At any rate most philosophers and philosophizing naturalists today occupy themselves mainly with attempts to refute energetics. That these attempts are constantly renewed is an involuntary evidence that each opponent of energetics considers the onslaughts of the rest as not sufficiently deadly, and hence believes that his own attacks are needed to finish the work. More important than these attempts which are occasioned at regular intervals by mistaken conceptions of the problem, is the increasing acceptance which the fundamental ideas of energetics have found among the workers of science. The biological sciences especially begin to recognize a very efficient means of progress in the treatment of their problems which is furnished by energetics.

On the other hand, energetics coincides with that movement which has originated on philosophical ground and which pursues very similar ends under the name of "pragmatism" or "humanism." This at least makes it plain that energetics corresponds to definite requirements of the day.

In the following pages I shall not, therefore, undertake to write anew an outline of energetics itself; for this I must refer to the above mentioned writings. On the contrary, I have set myself the task to help those who have already taken the opportunity to familiarize themselves with the main issue, in finding their way among the manifold new paths of thought. In the above-mentioned objections I have found sign-posts pointing out the most serious obstacles in this direction. Indeed, this has been a real, al-

though perhaps not contemplated, service which I have derived from those attacks. They have shown me where the hitherto customary modes of thought most impede a conversion to the newer view.

Great discoveries in natural science always bring in their train a far-reaching reform of general philosophical conceptions and modes of thought. One can easily point out the influence of the discoveries of Galileo, Kepler and Newton in the philosophy of the eighteenth and nineteenth centuries. Indeed this influence acts like a process of diffusion, that is to say, at first only those special branches of science are affected which lie nearest, and the farther away their domain, the later the influence of the new thought will be felt. Herein consists a very definite and characteristic difference between the times when the influence of a new thought is felt in the domain of the special sciences and in that of philosophy. The effect produced on philosophy is frequently not apparent until the special science has so far come to an understanding with the new conceptions that they become self-evident, that is, we no longer give them any thought.

But this reciprocal action becomes peculiarly complicated because of the following circumstance. Except in periods of unusual philosophical activity the specialist in science troubles himself but little with the elements of the universal or philosophical conceptions which he employs for the purpose of classifying his several data; and this is because they apparently do not essentially enter into the consideration of the latter. So specialized science is not only slow to adopt the corresponding thought-formations of contemporary philosophy, but even thinks little of changing them again forthwith to correspond to the modifications of philosophical conceptions. Therefore it remains as far behind philosophy as philosophy commonly remains behind science, whence arises a twofold delay in the philosophical

components of the special sciences, which of course does not appear in technical treatises but in the introductions to text-books. So for example the venerated primary and secondary qualities of John Locke still continue to maintain rather an undisturbed existence as a philosophical pensioner in text-books on physics. In spite of the Dalton law, according to which each gas in a compound of different gases exhibits the same properties and reaction as if it alone were present in that space, although thus, in other words, the gases are said to actually penetrate each other undisturbed and uninfluenced, no text-book neglects to teach in its first chapter the impenetrability of matter as an absolutely universal principle.

These remarkable conditions must be borne in mind if one would judge correctly the position of energetics in the science and philosophy of to-day. The idea of matter as the real substratum of all natural phenomena and as endowed with weight and mass, has arisen from the paramount influence of Newton's theory of gravitation, to which at the end of the eighteenth century was added the law of the conservation of weight even in the case of chemical processes. Side by side with ponderable matter earlier science had quietly accepted imponderable matter as well, such as fire, electricity, etc. Even Lavoisier who was the first to point out clearly the remarkable significance of relations of weight in the determination of chemical processes, showed the influence of tradition by including heat and light in his table of chemical elements although he knew that they did not possess measurable weight. However, in the nineteenth century these antiquated notions disappeared completely, and the dualism of matter and force developed, in which upon matter devolved the function of substance in the Aristotelian sense while the rôle of attribute (*Accidenz*) was assigned to force. In this way matter became the only real thing in phenomena, and

the imponderables, heat. light and electricity, attained thereby a peculiarly false position.

This feeling is most clearly expressed by Julius Robert Mayer in his fundamental treatise of 1842, "Remarks on the Forces of Inanimate Nature" (*Bemerkungen über die Kräfte der unbelebten Natur*). Mayer can not agree to the idea that forces should so come and go, now here and now gone, while only inert, lifeless matter should possess the advantage of indestructible duration; and so with conscious intent he seeks for a similar expression for that other imponderable essence which would establish its claim to a law of indestructibility. "There are two divisions of causes in nature between which no connecting link can be found experimentally. One division consists of the causes to which belong the attributes of ponderability and impenetrability, — forms of matter; the other, the causes which lack these attributes,—forces which because of their characteristic negative attribute are called also imponderables. Accordingly forces are indestructible, mutable, imponderable objects."

A desire for unity is the essential point in these declarations which as the first public presentation of Mayer's ideas contain the most direct expression of his thought. Even though Mayer can ascertain no connecting link between these two divisions he cannot make up his mind to treat them as quantities of an entirely distinct character as was customary in his time, and therefore he brings into prominence their agreements with a distinctness which even to-day acts like a thrust on those naturalists who stand for the older conception. Even to-day there are many who object to looking at force (or to give it its modern name, energy) as an *object,* and up to the very latest times remarks can be heard or read to the effect that matter is of course a reality, but that energy is not real but only thought. These propositions, to be sure, would prove even

more than was intended. They prove that in the minds of their advocates energy is not even *thought,* for if they had considered the relation of energy to the concept of reality, they would not have made such propositions.

It is well known that Mayer greatly hindered the right appreciation of his ideas by setting himself in opposition to the customary nomenclature. There is positively no doubt that Mayer knew perfectly well that his "force" was called "work" in contemporary mechanics, (at least in one particular case; in another, to be sure, it was also called "force" in the expression "living force" or "momentum"). To those who would unjustly accuse him of a mistake in this particular he makes this pertinent remark: "As far as force is concerned, the first question is not what sort of a thing 'force' is, but rather, what thing it is that we wish to call 'force.'" If we will substitute the word "energy," which is now in general use, in the above-mentioned definition of Mayer, it will read "energies are indestructible, mutable, imponderable objects."

Here, indeed, we have the conception which has been valid for more than half a century since the discovery of the law of the conservation of energy. In this connection in addition to the just mentioned conceptions of forces the word "object" has been heard but very little. While the conservation of matter (which does not actually exist at all, for only weight and mass are conserved while everything else pertaining to "matter" is changeable) stands for something natural and self-evident so that it is usually proclaimed to be a necessity of thought, the conservation of energy appears surprising, remarkable,—at any rate as something which bespeaks our astonishment and admiration.

This is the point at which modern energetics enters. First it would be necessary to make clear the thingishness or reality of energy, in connection with Mayer's train of

thought, so that old respectable Matter ought not feel ashamed in the company of energy in spite of the latter's dubious imponderability. In the second place, however, the assumption which Mayer made without close scrutiny, that the two were absolutely separated and without any connecting link, required a more exact investigation. The conclusion, as may already be inferred from this, is a complete reversal of the relations heretofore considered valid. While energy becomes clear and more confirmed as a reality, the claims of matter disappear and matter is left without any rights except those of tradition. Matter must not only tolerate energy on an equality as the progressive textbooks of the natural sciences to-day demand, but it must even yield its place unconditionally and withdraw as a superannuated dowager upon her reservation where, surrounded by a court of adherents of the past, she may await her approaching dissolution.

We observe here in Mayer a phenomenon which in spite of its singularity belongs to the most common in the psychology of investigators. It consists in the fact that the investigator does not pursue to the end the path which he himself discovered and trod. He regularly leaves in his work a remnant of the same false or redundant conception which he undertook to remove. We have just seen in the case of Lavoisier how in spite of his discovery of the far-reaching significance of gravity for the interpretation of chemical processes, especially for the determination of elements, he included in his table of elements, the essences light and heat which are without weight.

In the same way Copernicus set aside the epicycloid theory for the motion of the earth in relation to the sun while he considered the earth to be in motion and the sun stationary. Meanwhile he still clung to the epicycloids for the rest of the planets.* In the same way Mayer has at

* Here Professor Ostwald may think of Tycho Brahe.—Ed.

last recognized that ponderability is not an essential mark of the reality of a thing since he has verified *imponderable realities*. But his critique has not gone far enough to ask whether ponderability is to be assigned as important a rôle as the older theory had given it. He granted it this rôle without attempting its justification and by this means was led to his dualism.

Now it is characteristic of modern energetics that it sets aside even this dualism and installs energy as the sole universal generalization. All phenomena are reduced to properties and relations of energy, and especially matter, in so far as such a concept would at all prove useful, is to be defined in terms of energetics.

The question why or for what purpose we should or must undertake this reversal of the significance of ideas, is answered by the fact that the concept of energy as a matter of experience is proved to be broader than that of matter. When this is once discerned all discussion will naturally cease. We can not define the concept "man" by the concept "negro" but we can do the reverse. The concept of light or electricity can not be defined by the concept of matter for the former are both recognized to be immaterial objects; but both can be defined by the concept of energy, for they are kinds or factors of energy, whence it may above all be deduced that the concept of energy is indeed broader than that of matter. That even matter may be given a definition from the standpoint of energetics, —yes, even that the only clear definition of matter is that provided by energetics, will be set forth later.

Above all the new element in Mayer's train of thought was so altogether new that its "mortal coil" so painful to bear remained unnoticed. On the contrary, the work of Mayer's contemporaries and immediate successors who with him were the first to comprehend the monstrous import of the new thought, tended to attach the new knowl-

edge as closely as possible to the old traditional conceptions. Both Joule and Helmholtz advocated the mechanical theory of all natural phenomena. They saw in the transformations of energy nothing but the changes of atomistic motion, and especially Helmholtz sought an explanation for the law of the conservation of energy in the hypothesis that central forces, dependent merely on distance, were alone operative between the atoms.

In theoretical mechanics a special case of the law of conservation was known as the statement of the conservation of "living force," or momentum, which announced that when a celestial body reaches in its course a certain distance from its central body it possesses always the same velocity and therefore the same momentum or energy of motion, independent of the direction of the motion and the position of the point. In other words, if any sphere is placed around the central body of the system, the celestial body has always a definite value of its momentum when it finds itself anywhere in the plane of this sphere. The larger the radius of the sphere the smaller this momentum, and the function of distance (the potential) was also admitted which with the momentum yielded a constant difference (or a constant sum, according to the definition of the function in question).

If we so define the potential that its sum is constant with the momentum, we then have, as we know, the particular case of the law of the conservation of energy with regard to which only two kinds of energy (i. e., momentum or kinetic energy, and energy of position or distance) are to be considered, and are mutually transformed the one into the other. A condition of this relation is that no measurable part of energy is transferred to other forms in these motions. Especially in terrestrial processes the unavoidable conversion of a portion into heat is so infinitely small that it never comes into consideration in ex-

periments. Its existence is accepted only on the ground of the principle of continuity, but has not been the object of a direct measurement. Whenever it occurs, it remains outside the limits of our present instruments of measurement.

By virtue of a general property of our thought according to which we conceive of new facts as analogous as possible to those already known, it would now be possible to look upon this well-known and, because of its simplicity, easily comprehended and transparent relation as the norm or type for all other kinds of transformation of energy. This could happen only on the assumption that no other kinds of energy exist in the world than those which have been seen to be active in the astronomical phenomena already described. To be sure, in heat, light, electricity, etc., a large number of other kinds of energy were already recognized which without further remark might be considered as energy of motion or of position. The hypothetical supposition remains, that even in these cases only the two kinds of energy above named were really to be found, but that the corresponding motions and attractions took place between the invisible and immeasurably small atoms.

By this hypothesis, to be sure, the above mentioned psychological requirement was satisfied in a very far-reaching way, for by its means the concept of energy was simply made a component part of the mechanistic world-conception which at that time was very wide spread, and according to which everything that happens is supposed in the last analysis to depend upon the mechanical interaction of atoms. It is true that Leibnitz had already raised the pertinent objection that such an explanation would not account for psychical phenomena. For if the whole category of motions of the hypothetical brain atoms accompanying a given thought process should in any way be

made visible to us, we would see only tiny bodies in motion but not the corresponding thoughts, and the existence of the latter would remain as far from explanation as before. The weight of this objection meanwhile remained disregarded until a generation ago when Dubois Reymond raised it again and recognized it as an insurmountable barrier to the mechanistic world-conception. He was, to be sure, so convinced of the truth of the mechanistic view that he could not draw the conclusion that it was insufficient, but simply thought that here he would be compelled to note an absolute limit to the power of human intelligence. This attitude indicates the almost entirely undisputed dominion of the mechanistic conception (at least among naturalists) at the time of the discovery of the law of energy, and gives a psychological explanation for that arbitrary narrowing of the law of the conservation of energy which is now under consideration.

Another consequence of this same conception must be mentioned here, namely the division of all energy into kinetic and potential. It is directly evident that this division is one expression of the similar hypothesis that astronomical phenomena are typical for the whole category of natural phenomena. The extremely hypothetical character of this division is most obvious from the fact, for instance, that opinion is entirely divided as to whether the electric current represents kinetic or potential energy. On the ground of the kinetic hypothesis the kinetic nature of heat seems to be generally accepted, but if we ask for any objective sign by which kinetic energy is to be distinguished in these cases from potential, we receive no answer. Indeed I know of no place in literature in which this question has been even asked, much less answered. The peculiar nomenclature which originated with Rankine, even gives expression to the fact that only kinetic energy has claim to full actuality, and that energy of position is not energy

properly so called, but something which may become energy only under certain circumstances. The logical consequence of this still continues in the contradictory combination of concepts in the term "latent" heat. If we reflect that this became necessary just because the law of the conservation of energy was still quite unknown at the end of the eighteenth century when Black introduced the term, and that the expression "latent heat" was only used to save, at least outwardly, the idea that heat can not simply disappear as it seems to do in the process of melting or conversion to steam, the result is really remarkable. The by-paths which that old thinker had to tread because the law of energy was unknown to him, were involuntarily retained after the necessity had passed with the discovery of the law of energy; for there is now no difficulty in seeing that heat must disappear when the corresponding amount of energy is used for a change of condition (i. e., melting or conversion to steam).

The error in thought which is expressed by the words "potential energy" is by no means harmless. It prevents the comprehension of other kinds of energy as just as actual as the energy of motion. This is apparently due to the very obvious fact that the motion of a body endowed with kinetic energy can be *seen*, and hence we are convinced of its presence without being obliged to consider any further demonstration. But we can *feel* the existence of heat energy, and *see* light, and hence it comes that we can bring all energy to act directly or indirectly upon some sense organs and so betray its existence. Indeed an energy which could not in some way influence our organs of sense would be permanently unknown to us, and so could not form any component part of our world-conception. Kinetic energy, therefore, is not more actual or real in any particular than any other kind of energy, and every energy which is transformed into another is potential with regard

to that other, which is itself actual. This is the only consistent meaning which can be ascribed to these expressions, still science has shown no necessity for a short word by which to indicate the above mentioned relation, and therefore the best we can do is to drop those misleading terms entirely.

We are directly led by these observations to the general question as to the "real." If with every scientific precaution and by avoiding all tacit hypotheses, we try to characterize our relation to the "universe" (*Welt*), we can say that at the beginning of our conscious life we find ourselves brought into contact with a large number of experiences between which we can discover only a very slight connection. This is most distinctly expressed in the fact that we are able to foresee so little of what will take place in our future. For foresight is the peculiar content of our understanding; the measure of foresight according to space of time and multiplicity of foreseen events, is at once the measure of our intelligence. The new-born child foresees nothing except that he will find nourishment on the reaction upon certain irritations of smell and feeling (wherein it may remain a question whether consciousness is already active) and so stands upon a very low plane of intelligence, but even the highest grade of this attribute as it may be embodied in a successful investigator, politician, or captain of industry, is exactly characterized by the fact that such a man can foresee more and farther than his opponents or competitors.

We say that we know the things which we can foresee; we feel at home with regard to them, and their foreknown spatial and temporal relations are comprehensible to us. Upon such things, so far as sense-impressions are concerned, we at the same time bestow the name of "real" things. This expression is applicable only in so far as we are dealing with things of the so-called external world.

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Accordingly from the standpoint of a profounder and more general contemplation of the concept of reality, the distinction between actual and potential energy becomes an untenable and even dangerous error.

How now do matters stand in regard to the reality of energy itself? Mayer, as above mentioned, has expressly asserted its reality, but his view has met with but little support. Although at one time men were very ready to recognize the justice and importance of the law of the conservation of energy, they have troubled themselves but little about the general viewpoints by which Mayer was led to his great generalization. We have previously seen that it was exactly his desire to work out the real, the substantial, in "forces," that led him to the train of thought which proved so rich in consequences. In contrast to this there are authors even in our own time, who substitute for the central significance of the concept of energy a certain anxiety to recognize energy as a substance right or wrong, and to ascribe to it at least the same degree of reality as to matter. We find again and again the statement that energy is merely an abstraction or mathematical function possessing only the particular attribute of retaining its value under all circumstances. This causes a confusion which is obvious from a special peculiarity of all European languages, and with regard to which one should be greatly on his guard since its frequent repetition shows how easily it can cause trouble. This is the linguistic custom of indicating by the same word both the general concept and the concrete thing which corresponds to that concept.

By music, for instance, we understand the general art of so arranging tones that they create an esthetic impression, as well as each particular case in which this performance is put into practice. In the same way we call energy in general that function of measurable quantities which

possesses the property of conservation under all circumstances, as well as each particular value of this function that has been observed in nature. Obviously those who refuse reality to energy have in mind the universal concept from which in the interest of its universality every superfluous particular manifestation is omitted. In so doing they overlook the fact that the word energy denotes at the same time the concrete realization of the universal function. If a thing exists which possesses a definite numerical value that can be expressed in producible units and which can not be changed by any known process it will fulfil in the highest degree all requirements that can be made of a reality. Especially does it make possible the prediction that one may count its value the same before as after a desired operation. What scientific and technical meaning this possibility of prediction possesses it is not necessary to explain, for upon this rests all of the enormous progress which has been brought about by the discovery of the law of the conservation of energy.

Finally the reality of energy results in the most evident way from the circumstance that it possesses a marketable and commercial value. This is most clearly shown in the case of electrical energy. Here energy is consumed and paid for by the consumer, while all "material" portions of electrical apparatus are neither diminished nor altered by its use.

The confusion thus mentioned finds some excuse in the circumstance that the general concept of energy is indeed exceptionally broad and comprehensive, and with relation to its particular charcteristics permits of an almost unlimited diversity. Besides the fact that energy is an essentially positive magnitude, possessing the character of magnitude in a narrower sense (i. e., it can be added to *ad libitum*), and further, besides its quantitative conservation in all possible transformations, I could indeed mention no

characteristic which would be equally valid for all the different kinds of energy. This circumstance, however, has occasionally been made to count as a reason against energetics, just as if this universality were a fault or blemish of the energy-concept. Meanwhile we need reflect only a moment upon the problem to be solved in order to see that exactly this objectionable attribute is necessary for the desired purpose.

What then is the task before us? We must find a concept which is applicable to the greatest possible range of phenomena and offers the greatest possible amount of definite information about each particular case. The mechanistic philosophy sought this concept in motion, but was obliged to resort further to the concepts of mass and force in order to render possible the representation of actual phenomena; and the result for the non-mechanical (or in the sense of this hypothesis, crypto-mechanical) phenomena with reference to possible predictions was equal to zero. What conclusions had been drawn from the mechanistic hypothesis, for instance, that heat consisted of a motion of atoms? Nothing definite at all; for the kinetic hypothesis which Bernoulli evolved on the condition of gases rests upon a large number of other hypotheses, as is at once apparent from the fact that it has no application to liquid and solid states. With regard to the particular character of the supposed motions, the mechanistic hypothesis provided no direct information, and since these hypothetical motions had to have some magnitude and direction, many qnestions arose which had no empirical meaning, i. e., pseudo-problems (*Scheinprobleme*), to use a happy term of Mach's,—problems of such a remarkable character that even if their solution were made possible by some supernatural powers, we would be unable to utilize it since it has no reference to observable magnitudes.

In contrast to this, the extraordinary universality of

the concept of energy brings it about that such pseudo-problems never occur. If heat appears in any formation we can say nothing, to be sure, about the "inner nature" of this phenomenon on the strength of the principle of energy, but we can know in advance that all varieties of this heat will be parallel to corresponding variations of other similar energies whose amount we can calculate in advance from the amount of their heat variation. Further, from the particular property of heat-energy which is called temperature we can make other very characteristic predictions, but in so doing we are dealing always with measurable things and never with the unknown "heart of nature."*

This my opponents are ready to grant but they maintain that just herein lies the imperfection of energetics, while the mechanistic conceptions permit an invasion, although but hypothetical, into these mysteries. This logic is like that of a merchant who would place but little importance upon the careful computation of his assets and liabilities, and instead would set up a hypothetical account of how much property he would have under such and such circumstances. Even if he were to make his hypotheses plausible yet no one would call such an account reliable or business-like. He may reflect upon possibilities or probabilities in order to become clear about investment in an uncertain business, just as an investigator will speculate about the probability of the unknown conditions of a domain which he wishes to investigate, that he may have some idea in what direction to begin his experiments. But the reliable merchant, like the reliable man of research, will extend such forecasting of possibilities only to those conditions which he can and will afterwards submit to demonstration, and which will then have only measurable and verifiable

* This translates Goethe's well-known expression *"das Innere der Natur."*—Tr.

things for objects. As soon, however, as he introduces inaccessible factors into his calculation his work ceases to be reliable. We must therefore distinguish carefully such experimental assumptions of unknown relations between accessible quantities, from the hypotheses about conditions of things merely thought of and therefore inaccessible. Only the latter kind of hypotheses needs to be discarded, while the first is a necessary element of research.

In the scientific language of to-day these two fundamentally different kinds of hypotheses are called by the same name, "hypothesis." I am in favor of leaving the name hypothesis for the unverifiable assumptions, since indeed most hypotheses of the science of to-day are of this character. The other assumptions which, like a scaffolding, serve the purpose of the particular investigation on hand, and in the course of the work are replaced once or oftener according to our need by new usable assumptions until the condition sought for is actually found,—these assumptions made for the purpose of positive work, I call prototheses. A prototheses, therefore, is set up at the beginning of an investigation and disappears at its close if the work is successful; while a hypothesis is established when the work can be carried no farther. For this reason it is customary that in the production of scientific work the different prototheses which the investigator has employed are for the most part not mentioned at all, for it has been usual to communicate only those assumptions which the investigation has finally proved to be correct or at least approximate. Silence is kept with regard to the unsuccessful prototheses just as the scaffolding is removed after the building is completed. Only very rarely, as for instance in Kepler's reports of his astronomical researches, do we learn a little about the unsuccessful prototheses. On the other hand the hypotheses in the narrower sense occupy a large place in literature. Because inasmuch as they have

reference to scientifically inaccessible things they can be neither proved nor refuted, an endless pro and con is the usual result; further, because among the problems there are also pseudo-problems which do not at all refer to demonstrable things, these problems are unsolvable and are dragged through science as unanswered questions which can not be disposed of, but not until they are recognized to be merely pseudo-problems.

It is therefore very important to have a sure method for the recognition of hypotheses in the narrower sense, and of pseudo-problems. Such a distinguishing mark has already been given in what we have just said, at least for the domain of the exact sciences. When expressions or notations of magnitudes which can not be observed and measured and for which we can substitute no definite and empirically determinable value, occur in a formula by means of which some physical relations are to be represented, we have to deal with an hypothesis. For the task of the exact sciences is to establish the reciprocal relation of measurable and demonstrable quantities, or in other words to find the mathematical forms or functions by which these quantities are interrelated, so that one of them can be calculated when the others are given. In order to establish experimentally such a functional relation it is therefore necessary to measure singly all variable or constant magnitudes which appear in such an equation. No other means is known by which to establish whether the protothetically assumed functional condition exists or not. As long as a single magnitude appears which is not susceptible to measurement, we can not consider the assumed condition as proven. Then, too, such an equation is useless, for since it expresses the condition of a magnitude which is not susceptible of measurement, it makes a statement about a thing which has no influence on, nor significance for, science or life. For not being susceptible to

measurement is only another expression for the fact that nothing at all depends upon this thing. If anything did depend upon it this dependence would be one way to experience something about the thing, and it would be measurable.

This recipe for the discovery of pseudo-problems refers of course only to the relations of measurable quantities which can be expressed in mathematical equations. Not until our own time has mathematics reached the point where there are other generalizations besides quantities which permit of mathematical treatment, and the corresponding method of calculation has not yet been developed for general use. So by means of the still imperfect medium of the language we must attempt to solve the further problem of characterizing pseudo-problems in general. We shall find the way for this in an observation which has just been made. If the solution of a problem would change nothing in our conception of actual relations, it is characterized by this fact as a pseudo-problem. The recipe accordingly is as follows: Suppose the problem solved and assume any one of all possible answers to be correct, we then investigate what effect this would have on our conduct. If it produces no effect the problem is thereby indicated to be a pseudo-problem.

In order to learn the application of this prescription we may put the following question, Did the world have a beginning in time, or has it existed from all eternity? By way of experiment we will assume that it has existed since eternity, and will ask what would change in our conduct by this knowledge? I find at least for myself that nothing would change by this knowledge, and just as little if we assume that there was a beginning in time. Hence I must say that even if I positively learn in some way which of the two possibilities is correct, it would be a matter of

perfect indifference to me, and this being the case we have here a pseudo-problem.

The significance of this procedure is apparent from the answer to the question as to what we call "correct" or "true." The answer was, that which enables us to make accurate predictions. Something which does not allow us to make any prediction whatever is essentially of no interest to us in any way, and there is no need of being concerned about it.

Now if we apply these observations to energetics we will recognize the fact that we can protect ourselves successfully against pseudo-problems by formulating our questions concerning phenomena from the viewpoint of energetics. At present it may be stated without fear of objection that among the different domains of physical phenomena there is no other universal condition than that of energy. That is to say, whatever may happen physically (chemical and physiological phenomena are here always included under this term) we can state an equation every time between the energies that have disappeared and those newly arrived. There is no other physical quantity to which such a generalization would apply. Further since such a statement refers always to measurable and demonstrable things on account of the general measurableness and demonstrability of energy, therefore all applications of the law of the conservation of energy treat of actual, and never of pseudo-problems. There are cases in which the exact measurement of energy magnitudes under discussion offers very considerable difficulties and on which therefore only gross approximations can be reached; but these can not invalidate the general principle. Just so there are very many cases of the law of conservation in which all members of the equation do not permit of measurement; such cases are to be considered as prototheses; that is, that in the case where we can not prove the con-

clusiveness of the law of conservation by a measurement of all the single members, we make the assumption that the law is conclusive, but we reserve to ourselves the right to submit this assumption to demonstration as soon as possible.

A good example of this kind of scientific progress is shown in the measurement of the physiological evolution of heat in animals and man. The old measurements of Despretz in the first half of the nineteenth century yielded results in opposition to the hypotheses of that day. It was exactly the deeper investigation of this problem which led both Robert Mayer and Helmholtz to the discovery of the law of the conservation of energy. Finally in our days the instruments of measurement have developed so far that the validity of the law has been proven with an exactness of 1:1000 even for physiological combustion (including mechanical and psychical work performed). As long as these latter measurements were not under consideration, the assumption of the validity of the law of conservation for physiological combustion was a protothesis which referred to things that were fundamentally measurable even though the technical accomplishment of measurement was so difficult that one could not place perfect confidence in it. Now it is a scientific truth that is involved, which, to be sure, possesses this quality only to the possibility of error in the ratio of 1:1000. That the law of conservation is also valid in this case is again a protothesis which awaits a demonstration in the future with more delicate instruments of precision.

To the question how the concept of energy in its great universality becomes capable of bringing to expression the infinite multiplicity of facts, the answer is that there are a large number of different kinds of energy, all of whose properties satisfy the above given definition with reference to the character of quantities, the essentially

positive quality and the law of conservation, but at the same time contain still other additional qualifications or properties upon which their difference rests. Thus for instance, the pronounced binary character of electric and magnetic energy is altogether absent in heat, for this is perfectly determined by a mere number, the unit being given. Kinetic energy has a *direction in space* while volume-energy acts in every place and in all directions where a change in volume is made possible. Since nothing at all in the general concept of energy is stated about relations of space and time, these are available for narrower definitions and the variations here possible condition the variety of several forms of energy.

In this way is settled the oft repeated objection that the number of the different kinds of energy is extraordinarily large, and we must seriously consider the possibility of other kinds of energy as yet unknown. If energy is a concept that is serviceable for the representation of phenomena, then its variety must be representable by a corresponding variety of the concept. For all scientific subsuming and representation consists in coordinating to the varieties of the domain to be investigated another schematic variety of symbols (of a mathematical or linguistic nature), in which the corresponding functional relation is brought to expression. What enormous significance such a scientific sign-language has for the mastery of a domain, may be observed perhaps most plainly in the chemical formulas which provide a very considerable part of what universal facts science has been able to ascertain about chemical relations. Just as chemistry can not be blamed for its eighty elements since it is not at liberty to establish a number of its own choice, but is compelled instead to recognize as an element every substance which corresponds to the general definition, so energetics is not free to establish arbitrarily the number of its correlated kinds of energy

but must carefully register the many kinds which present themselves and work out the characteristic indications of each particular species. The unity of this multiplicity becomes demonstrable and fundamental by virtue of the universal law of transformation.

A broader, more essential circumstance in this multiplicity, is the divisibility of all kinds of energy into two factors of characteristically general properties. For each kind of energy a factor of intensity is first determined which does not possess the simple quality of magnitude, i. e., is not directly addible; and in the second place a factor of capacity or quantity which is possessed of an unqualified addibility and which therefore is a magnitude in a narrower sense. The simplest way to conceive of this fundamental distinction is to unite physically two equal values of the kind in question. Two equal intensities will remain *unchanged* when joined together, but two equal capacities will yield a *double* result. If, for instance, two bodies of equal temperature or equal electrical potential are combined they remain unchanged and the temperature or potential, as the case may be, will be the same afterwards as before. Two equal masses, entropies, quantities of electricity, etc., on the other hand, when added together yield a double amount. Consequently, the former are intensities and the latter capacities.

Now, the values of these factors of energy bring a new multiplicity into the concept of energy which serves to express more important universal relations not touched upon in the law of conservation. A given quantity of heat for instance is always equivalent to a definite quantity of electrical energy whatever may be its temperature. Whenever one is transformed into the other the same amount is obtained. This indicates that the law of conservation is independent of the difference between magnitudes of intensity; there is an equal independence for magnitudes of

capacity which appears from the fact that the product of the two produces the numerical value of energy. On the other hand the values of intensity are of decided importance for the question whether a transformation of energy will take place in a given case, and to what extent. These relations have become the best known with regard to heat. We know that a given amount of heat can be transformed into other kinds of energy only in so far as there is a difference in temperature. The unconvertible part is equal to the ratio of the available difference in temperature to the absolute temperature of the transition. But the same statement is valid also for all other kinds of energy. The pencil which I hold in my hand, by virtue of its motion through space which it shares with the earth and all that is upon it, possesses a kinetic energy which many times exceeds that of a discharged cannon ball; consequently it might originate the most incredible disturbances if it could only transfer its kinetic energy to other bodies. But this takes place only when there is a difference of velocity, and hence the enormous velocity which it possesses with reference to the sun's system of coordinates, is altogether unavailable in its terrestrial condition.

Accordingly while the first principle of energetics, or the law of the transformation of energy under the conservation of its numerical value yields an equation for every case where one energy becomes transformed into another, the second principle which governs the relations of intensity of energy, answers the question whether and when a transformation of existing energies would take place. Since two equal intensities do not influence each other (indeed the fact that they do not exert an influence defines the equality of the intensities) every transformation of any energies whatever presupposes some difference of intensity. On the other hand, since everything that happens may be characterized as a transformation of energy of some kind

or other, the presence of difference in intensity is the general assumption of each occurrence.* When such a difference exists the amount of the occurrence, i. e., the amount of converted energy is proportional to the difference of intensity, and otherwise only dependent on the energies present and their factors. These considerations are collected together as a whole in the second principle of energetics, of which the part relating to heat was discovered by Sadi Carnot as early as 1827. In a more obvious, if not a more exhaustive, form this second principle may be stated with Clausius in the form "energy of rest is not converted of its own accord." Here energy of rest denotes that energy in which differences of intensity are not present and the compelling force by which it is converted lies in the introduction of new differences of intensity into the field under observation. More general is the form that in order for something to happen there must be no compensated differences of intensity, and the occurrence will be in proportion to these differences.

Naturally the question arises as to which rôle the magnitudes of capacity play in our world-conception of energetics. The answer is that in essential points the function of these is the same as that formerly ascribed to matter by the earlier yet undeveloped condition of science. If we consider that mass, weight, and volume, are kinds of energy corresponding to magnitudes of capacity we will again recognize these factors in the old "primary properties of matter." The "secondary" properties prove likewise to be magnitudes of capacity which however do not possess among themselves such close spatial relations as the above mentioned.

The peculiarity that the kinds of energy, volume-en-

* This condition is indeed necessary, but not sufficient, for "compensated" differences of intensity may also exist without anything happening. These relations are also regulated by law, and we have only refrained from entering upon them in order that the presentation might not become needlessly complicated.

ergy, gravity-energy, and motion, appear always united in space, has led to the concept of matter; but since the amount of these energies is itself variable in any such given formation it became necessary in order to give expression to this variability to assume a substratum for those variable properties which in itself would be without properties and therefore immutable. Thus arose the present logical malformation of the concept of matter as a thing that lies at the basis of all particular objects but itself has no properties by which it can be recognized and demonstrated.

But though it is clear that no satisfactory description of the conditions of ponderable objects can be derived from the concept of matter, the question how it comes that those three kinds of energy are always found combined in the same space, still remains unanswered. The answer may be furnished by the investigation of the question as to what the condition of a formation would be if one of these energies were lacking. If there were no volume-energy then the object would take no room and therefore could not be either perceived or in any way manipulated by us. If there were no motion the object would have no mass and would consequently at the smallest impulse receive an infinite velocity and at once escape all notice. Finally if it had no energy of gravitation, it would not remain upon the earth and so likewise would disappear from our perception. The result is therefore that the combination of these three kinds of energy is necessary in order that the object can become an object of our preception, and that therefore only such formations of the system of energetics can come to our knowledge as contain these three kinds spatially combined with one another. Whether there are formations in which one or another of these kinds of energy is lacking we do not know and can not know, but since they can form no com-

ponent part of our universe we can not possibly take them into consideration nor have we any reason to.

Thus we admit that a definite experience surely lies at the foundation of the concept of matter; but in the formation of this concept it found only an imperfect and awkward expression, and this is the reason why the continued use of the word "matter" has become unsuited to scientific language. The complex of the three kinds of energy is called "a body" in our present phraseology. It may now be easily understood that nothing would remain of a body if we would deprive it in thought of all its properties, i. e., the energies present within its space; for since the body is nothing but a complex of energies it disappears in thought if the components of the complex should be considered removed.

It can not be my task to demonstrate that physics as a whole (including chemistry and physiology) can be represented comprehensively and exhaustively as energetics. This will even be granted by my opponents; they call into question only the usefulness of such a presentation. But I think that I have demonstrated this clearly enough here and in my numerous text-books. The greater usefulness of the energetic presentation is apparent nowadays in a very characteristic way in physiology and biology. These two sciences have hitherto suffered greatly under the atomistic mechanics, which has filled them with a host of pseudo-problems. I need only recall the countless theories of heredity, all of which possess the typical attribute that they can neither be proved nor refuted, and which therefore have become an inexhaustible source of fruitless discussion. At present we are beginning to see frequently that by referring the problem to the principle of energetics all those pseudo-problems are removed and science at last is placed in the state where it may propose real questions and seek and find real answers to them.

To be sure energetics in its present form does not yet embrace all the multiplicity of detail the manifestation of which we meet in biological phenomena. The spatial and temporal modalities in the course of a transformation of energy, definite in kind and amount, are especially governed by laws like the Ohm law in which constants of material and form occur in great variety. The theory of these occurrences has been established by Fourier in his theory of the conduction of heat, but a recognized extension of these conditions is still a problem of the future and may be designated as the most important problem of energetics to-day. Biology has everywhere to do with determinations of this kind and in the introduction of corresponding concepts (as, e. g., Reinke's "dominants") there is a demand that such tasks be accomplished even though no way is pointed out for their performance. Such a way would appear only when some general property or common law could be predicated of these "dominants."

On the other hand, the application of energetics in the range of the different sciences is not yet by any means exhausted. As an example of such virgin ground which will bear the richest fruits as soon as it is put under cultivation, I here give at the conclusion of these expositions a sketch of the beginnings of civilization from the standpoint of energetics.

That which distinguishes men from animals we call culture. In its commonest interpretation it consists in the fact that man possesses a much more extensive control over his environment. In other words, he understands how to influence and guide natural events in such a way that they shall take a course which corresponds to his requirements and desires. This ability is not unlimited, but the progress of culture is characterized by the increase of man's dominion over his world. Now if all events are defined as transformations of energy as we have seen, their

control becomes directly dependent upon the control of the relations of energy, and the history of civilization becomes the history of man's advancing control over energy.

In order to recognize how definitely the facts of this apparently very general observation take form in every single case, we will outline according to the theory of energetics the first evolution of man from his earlier brute condition. We are willing to look upon the use of tools as the first sign of culture in the aspiring human race. But a tool can be accurately defined as a means by which existing native energy is given a character according to some definite purpose. In other words, a tool is a transformer of energy, and the more perfectly it is fashioned to carry out this transformation, the more perfect a tool it is.

Staves, clubs and stones probably served as the first tools. The energy which primitive man (like the animals) first had at his disposal is the chemical energy of nourishment stored up in his muscles. There is a definite amount of this energy which could be actualized in a definite range determined for the position of each body by the length of the arms. Hence when a man took a staff in his hand he increased the radius of his muscular energy by the length of his staff, and was therefore able to apply it more usefully. By the use of a club he could accumulate his muscular energy in the form of kinetic energy and bring it into play with sudden force where the club alighted. By this means it was possible to perform work which could not have been accomplished by the unaided activity of his muscular energy in the form of pressure.

The discovery of throwing was a great step in advance in the line of useful conversion of energy. It united the two stages of progress just mentioned and extended them. The radius of efficiency of muscular energy was thereby greatly increased and at the same time an accumulation of

force resulted from a summation of the impetus of the throw. The improvements following upon this consist in the selection or construction of a vehicle for the transmitted energy so as to provide on the one hand the greatest possible amount, and on the other hand the most exact direction. In bow and arrow we recognize a further development of this problem in which the muscular energy is temporarily transformed into the elastic or form-energy of the drawn bow, mainly in order to have the advantage of direction; while its adaptation in a cross-bow is intended to store up the greatest amount of energy that can be stored as long before the shot as is desired, and therefore serves the purpose better.

Another kind of transformation of energy relates to the concentration of energy in small surfaces, as edges and points; both bring it about that muscular work by virtue of the diminution of resistance in the surface, is able to exercise so much greater an intensity of pressure. A sharp and pointed tool separates and penetrates objects which would remain invulnerable to the fist or a stone.

By a systematic combination of these expedients new ones are brought into existence. Sword and spear unite the increased length of the arm-radius with the concentrated effectiveness of edge and point. With similar adaptation the objects which are thrown or shot result later in the javelin and pointed arrow.

All of these inventions bear upon the valuation of the primary energy which is supplied in human muscles. It was indeed a monstrous advance when other sources of energy were drawn upon for the purpose of the individual. On the one hand we may here consider similar physiological energies; the use of slaves and domestic animals for work indicates this step and indeed I consider it probable that the former was first attained. Next followed the adaptation of *inorganic* energies as well: fire and wind

were made subservient to human needs. In this way we are led on the basis of the energetic view, by a continuous transition up to the most complicated manifestations of our own day.

A second series of corresponding considerations is associated with the provision of the chemical energy of nourishment, which as the first step of muscular energy is a necessary assumption for its generation and utilization. The accumulation of provisions for the times when they will not be directly procurable, results as is well known in the foundation of capital.

Finally *value* in general rests upon the transformation of energy. One and the same amount of energy measured numerically is of course not indifferent even for the events of nature which do not permit of valuation. On the contrary a given amount of energy is the more convertible the greater the differences of intensity with which it is affected with relation to its environment. The valuation of energy for man's purposes is determined in a similar, although somewhat more complicated way, by differences of intensity and the coefficients of transformation dependent on them. An amount of energy is in general the more valuable, the more completely it may be transformed for man's purposes. Thus a piece of coal and a piece of roasted meat may contain an equal amount of chemical energy (measured as total energy as well as free) while both have a very different value with regard to human purposes. This is because man can not utilize by means of his digestive apparatus the chemical energy of coal, but can that of meat.

This relation characterizes the general state of affairs. Nature offers us native energy: in the first place the energy of the sunbeam, in the second, the products of the transformation of this energy which have been formed without man's assistance. To transfer this native energy into

such forms as are suited directly to the needs of mankind is the universal task of man in his relation to nature. By every transformation of this kind one part of the native energy is converted by the equalization of intensity (which in the last analysis always amounts to an equalization of temperature) into the unusable form of latent energy, and only a certain fraction of the original native energy serves its purpose. Every machine, every process, in fact every intelligent person who improves this coefficient of transformation is valuable, and the greater the improvement and the more important for mankind the kind of energy upon which the improvement is devoted, the more valuable he is.

This criterion of value is universal. It relates as well to the simplest expedient of daily life as to the loftiest manifestation of science and art. The application of this thought to the different domains of human activity would require a book, so we will let the matter rest with only this allusion, but the reader is urged to apply the principle to any concern in which he is especially interested and to convince himself whether and how it fulfils its purpose.

In all the preceding expositions we have not discussed the relation of *psychical* phenomena to energy. I have long since expressed my opinion that the whole of psychology is undergoing a fundamental advancement through the protothetical assumption of the existence of a psychical energy. This becomes particularly evident in the old problem as to how spirit and matter can operate together, which is recognized as a pseudo-problem and is therefore set aside. If on the one hand there is no fundamental reason to prevent us from comprehending psychical phenomena from the point of view of energetics, and on the other hand so-called matter is recognized as a particular combination of energies, then what was formerly accepted as a contrast in principle between the two realms com-

pletely disappears and the problem of the connection between body and spirit belongs to the same series as the problem of the connection between chemical and electrical energy wihch is treated in the theory of voltaic chains and has been solved up to a definite point.

WILHELM OSTWALD.

GROSSBOTHEN, Feb., 1907.

PROFESSOR OSTWALD'S PHILOSOPHY.

AN APPRECIATION AND A CRITICISM.

SCIENCE and philosophy are inseparables, for science rests on certain presuppositions the comprehension of which belongs to the domain of philosophy. Yet it sometimes seems as if a deep gulf existed between the two; for according to the law of a division of labor, scientists as a rule plod on in their various lines of research without troubling themselves about the principles that underlie their investigations, arguments, and conclusions, while most philosophers live in their abstractions, moralizing and theorizing in utter unconcern about the facts of physics chemistry, biology, or what not. Some men, however, have risen from the ranks of the scientists who ventured to go deeper to find the bottom rock of science, foremost among whom stands Ernst Mach, who has opened new vistas and pointed out the way to a philosophical pursuance of scientific work, and among his successors none is better and more widely known than his brilliant disciple, Professor Wilhelm Ostwald. Having started as a scientist, he has become more and more a philosopher, and we learn that he has now surrendered his chair of physical chemistry at Leipsic to devote himself exclusively to philosophical work which has grown increasingly dearer to him; but he seems to be disappointed that his colleagues do not follow his lead and are slow in adopting his philosophy. He says (on pages 483-484 of this issue):

"Except in periods of unusual philosophical activity the specialist in science troubles himself but little with the elements of the universal or philosophical conceptions which he employs for the purpose of classifying his several data; and this is because they apparently do not essentially enter into the consideration of the latter. So specialized science is not only slow to adopt the corresponding thought-formations of contemporary philosophy, but even thinks little of changing them again forthwith to correspond to the modifications of philosophical conceptions. Therefore it remains as far behind philosophy as philosophy commonly remains behind science, whence arises a twofold delay in the philosophical components of the special sciences, which of course does not appear in technical treatises but in the introductions to text-books.... These remarkable conditions must be borne in mind if one would judge correctly the position of energetics in the science and philosophy of to-day."

With Professor Ostwald we believe that philosophy is indispensable to science; but at the same time it is our opinion that scientists ought to move slowly and think twice before they introduce a new and untried philosophy into text-books, or even the introductions to text-books. Their conservatism may indeed be a vice if, as Ostwald suggests, it is due to inertia and indifference, but slowness is better than rashness, and it is preferable to avoid innovations which after a second sober thought would have to be abandoned.

Since Professor Ostwald has grown into prominence, having many friends and admirers both in the old and the new world, we will here investigate his claim to recognition and trust that a discussion of his philosophy will be welcome to our readers.

Professor Ostwald has set forth his philosophical views in his *Vorlesungen über Naturphilosophie*, a voluminous work of extraordinary erudition, and has recently restated them in a terse recapitulation of the leading principles in an essay entitled "Zur modernen Energetik," which has just appeared in the *Rivista di Scienza*, a new philosophical

magazine ably conducted by a committee of directors with the editorial management of Dr. Giuseppe Jona of Milan, and published at Bologne by Nicola Zanichelli. In order to offer to our readers an authoritative presentation of Professor Ostwald's views we publish with the author's kind permission an English translation of this essay which is incorporated in the present number of *The Monist*, and in our discussion we will most frequently refer to this, the most recent statement of his views.

* * *

The salient point of Professor Ostwald's philosophy is the idea that the only reality of the world is energy, hence its name *Energetik*, or as we would say in English, "energetics." Ostwald follows the monistic tendency of the age to reduce all explanations to one supreme principle, and he finds this to be energy, not (as others have claimed) matter. Ostwald says (p. 484):

"The idea of matter as the real substratum of all natural phenomena and as endowed with weight and mass, has arisen from the paramount influence of Newton's theory of gravitation to which at the end of the eighteenth century was added the law of the conservation of weight even in the case of chemical processes. Side by side with ponderable matter earlier science had quietly accepted imponderable matter as well, such as fire, electricity, etc. Even Lavoisier who was the first to point out clearly the remarkable significance of relations of weight in the determination of chemical processes, showed the influence of tradition by including heat and light in his table of chemical elements although he knew that they did not possess measurable weight. However, in the nineteenth century these antiquated notions disappeared completely, and the dualism of matter and force developed, in which upon matter devolved the function of substance in the Aristotelian sense, while the rôle of attribute (*Accidenz*) was assigned to force. In this way matter became the only real thing in phenomena, and the imponderables, heat, light, and electricity attained thereby a peculiarly false position."

We are further told how Robert Mayer distinguished

between two things in nature: (1) matter of all kinds endowed with the qualities of ponderability and imponderability, and (2) forces (or as we now would say "forms of energy") which are imponderable. Mayer insists that force is as indestructible as matter although it is changeable and imponderable. According to Ostwald, Mayer follows a monistic tendency, but he is not thoroughgoing in the application of his principle. He stops half way, while modern energetics discards the dualism of matter and energy, and establishes energy as the one and sole reality. Professor Ostwald says (p. 488):

> "Now it is characteristic of modern energetics that it sets aside even this dualism [of matter and energy] and installs energy as the sole universal generalization. All phenomena are reduced to properties and relations of energy, and especially matter, in so far as such a concept would at all prove useful, is to be defined in terms of energetics."

The law of the conservation of matter is denounced by Ostwald as an error because matter, says he (p. 486), "does not actually exist at all," for "only weight and mass are conserved while everything else pertaining to matter is changeable." This argument for the non-existence of matter is rather naive. Hitherto we have always thought that matter *is* weight and mass, and wherever we find weight and mass we have to deal with a reality called "matter." Now we are told that matter is unreal, that its qualities however are real. What would Professor Ostwald say to the retort that energy is a nonentity since there are only tensions and motions. We might in this way even deny the existence of motion, for what really happens is merely a change of place.

Ostwald goes far out of his way to prove that potential energy is real, which to our knowledge has never been doubted; but he further astonishes us by saying (p. 495) that "from the standpoint of a profounder and more gen-

eral contemplation of the concept of reality the distinction between actual and potential energy becomes an untenable and even dangerous error." Now we grant that potential energy is as real as kinetic energy; it is only latent because it is somehow pent up. It is the energy of tension which, however, can be set free in one way or another. Nevertheless we must distinguish between it, i. e., potential energy, and actual motion commonly called kinetic energy. The former can be changed into the latter and is energy as much and as truly as the latter; but for all that, potential energy is different from kinetic energy, being energy held in abeyance. Ostwald represents potential energy as more mysterious than it is, for leaving out complicated cases, what deep mystery is there in the tension of a bow? It is a strain; an incipient motion is prevented from moving. The string is drawn and held back, and when the tension is relaxed by releasing the string, the check is removed and the motion actually takes place. There is no need of any mystification nor of a refutation of a mysterious conception of the facts.

* * *

Philosophy would be an easy job if it were nothing but a search for the most general term, but such is Ostwald's idea of it. He says (p. 497):

"What then is the task before us? We must find a concept which is applicable to the greatest possible range of phenomena and offers the greatest possible amount of definite information about each particular case."

It is an inveterate mistake to think that scientific problems are solved by generalization. Generalization is only reliable if guided by due discrimination, and between the two (in spite of Mr. Spencer's eulogies of "the power of generalization") discrimination is the more difficult and the more fruitful. A hasty generalization is exactly what we must be on our guard against. The mistakes of chil-

dren and of savages occur through wrong generalization by a lack of discrimination. How little Professor Ostwald is aware of the pitfalls of generalization, appears from the fact that he trustingly follows whithersoever generalization leads. He says (p. 488):

"The question why or for what purpose we should or must undertake this reversal of the significance of ideas, is answered by the fact that the concept of energy as a matter of experience is proved to be broader than that of matter. When this is once discerned all discussion will naturally cease. We can not define the concept 'man' by the concept 'negro,' but we can do the reverse."

It is true that we can not define the concept "negro" without the concept "man," but neither can we define it without enumerating those features which are typical of the negro and can not be traced in other species of the genus *homo*. The qualities common to all men are more obvious and more easily apprehended than those others which form the characteristics of the different species, and the latter are neither included in the former nor can they be deduced therefrom. The more general idea is by no means more useful for explanations than the more specific concepts, for we must not forget that the more general a concept is, the less does it contain, the poorer are its contents, and the emptier it is of detail. Any attempt at deducing all species from their common genus will soon prove a failure.

But the present situation is more complicated, because energy and matter are not homogeneous. Suppose we have the genus "man" and the idea "angel," can we subsume the latter under the former, because angels possess some features that are human? Scarcely! There is an element in the idea of angels which is not found in men.

We grant that gravity which is the most inalienable property of matter is, indeed, a species of energy, but for that reason we do not feel justified in eliminating the term

matter. Energy, even according to Professor Ostwald, is imponderable, and yet ponderable matter is assumed to be energy. Energy is not extended, for it is not material nor a bodily reality, yet we are expected to seek in energy the key to the riddles of both space and substance. Professor Ostwald does not betray the secret of his solution, nor can he, for the term "energy" is not the genus of either space or substance. It is the most general term of its kind but it does not possess that universality which he imputes to it.

Ostwald speaks of "volume-energy" but nothing is gained by the introduction of this compound word. We know what volume is and we know what energy is, but it would be easier to explain the nature of a fish from a mermaid than the character of volume, of space, or of extension, from volume-energy.

* * *

Efforts have been made before Professor Ostwald to find a common term for both matter and energy, but all attempts have failed and must fail, although we grant that matter according to its mass possesses a definite amount of energy called gravity which changes with a change of position. We had a discussion on the subject more than thirteen years ago with Mr. Paul R. Shipman whose theory on the identity of matter and energy is, if possible, even more ingenious than Professor Ostwald's, but it is no less faulty in its logic. Mr. Shipman's mistake is ultimately the same as Ostwald's, a misapplication of the monistic principle combined with a wrong method of generalization.

It will help us to understand the mistake of Ostwald, if we become acquainted with his American counterpart and hence it will not be too great a digression if we quote some striking passages from Mr. Shipman's article "Suggestions Touching Matter and Energy," which appeared in No. 349 of *The Open Court* (May, 1894, pp. 4063 ff.) There he says:

"Speaking roundly, as well as figuratively, we may call matter funded energy—energy current matter; or matter we may distinguish, roundly, as visible energy—energy as invisible matter. Take, for example, the clod at your feet. It is matter, you say; yet analyse it, pushing the analysis as far as you may, and you get nothing but modes of energy, with a residuum that offers nothing different. Nevertheless, these parts together make the clod. Whither does this unquestioned fact point, if not to the conclusion that matter and energy are in essence the same? Nothing but energy can be got out of matter, because matter is nothing but energy more or less compounded, as energy is nothing but matter more or less resolved. Matter, one may say, bears the relation to energy, always speaking roundly, that a stocking bears to the thread of which it is knit: ravel matter, and you have energy—knit up the raveling, and you have matter again. Energy is the simpler state of the common substance—the raw material, as it were, of which matter is the elaboration in greater or less degree.....

"The insensible is conceivable only in terms of the sensible, into which, if real, it is transformable. Cognition of the insensible supposes cognition of the sensible, conception being possible only within the limits of possible perception. Let this truth be firmly grasped. The intellectual currency that is not redeemable in the standard coin of the realm of sense is worthless. What cannot be translated into resistance has no existence, no reality, no meaning, is nothing. Whatever resists exists, and, conversely, whatever exists resists. Resistance and existence are interchangeable terms; but resistance is synonymous with energy or force, which is the stuff of sensible matter—that of which sensible matter is the more or less complex form. For existence, be it observed, though fundamentally one, is divisible superficially into ponderable matter, or matter so named, and imponderable matter, or energy, whereof each is tranmutable into the other, the two mutually blending to form the sum-total of reality."

Mr. Shipman's article is noteworthy on account of the ingenious way in which he renders his identification of matter and energy plausible to the reader, but there is no need of subsuming everything under one head. Among other things we said in our reply:

"When we make the abstraction 'matter,' we select certain fea-

tures of our experiences, and drop all others. When speaking of the matter of which a man is composed, we advisedly omit his feelings, his intelligence, his character, his plans, and purposes, and so forth. When speaking of motion, we mean change of place, and not mass, not matter, not spirit, nor anything else; when speaking of force, we refer to that which can produce motion and overcome resistance.

"This seems clear enough, and yet how much is this elementary rule of thinking sinned against! There are plenty of pseudo-monistic philosophers who are perfectly satisfied as soon as they have stored all their ideas into one box of their favorite generalization. Whenever they try to think their ideas to an end they become entangled in contradictions, and seeing no way out of it, they naturally turn agnostics.....

"To-day Mr. Shipman presents us with a number of conundrums which grow out of the henistic principle of his method. We are told that 'matter and energy are in essence the same.' 'Force is material,' yet at the same time 'matter is immaterial.' This being so, the old refrain follows: 'Existence is an inscrutable fact.'

"That any one could regard 'change of place' as a material thing seems impossible, but such is the consistent sequence of Mr. Shipman's materialistic henism.

"There are a number of minor points in Mr. Shipman's article; e. g., 'energy is something moving,' while it is the actual or potential moving of something; matter and energy are 'transmutable each into the other,' which is a new law that if true would produce changes more wonderful than Aladdin's lamp; 'energy is a form of matter, and is its own vehicle'; which sounds like, 'a blow is the fist which deals the blow, and a blow is its own striker'; 'no atom moves without loss of substance,' an observation which, for all we know, might prove true, but where is the verification of this startling proposition? Shall we believe that the ether profits thereby and is thus constantly increasing, or is this loss of substance an absolute loss so that in the long run the world would dwindle away? 'What cannot be translated into resistance has no existence.' Can we translate the theorem of Pythagoras into resistance, or the ideas of truth, beauty, and righteousness? And as we cannot, have they, therefore, no existence?"

We have to grant that matter contains besides its gravity (i. e., the weight which matter exerts and which can

be expressed in terms of energy) the additional feature of volume which can not be described in terms of energy; and further, while all other forms of energy are transferable from one body to another, gravity is always inalienably joined to a definite mass. These considerations are sufficient to continue the discrimination made between matter and energy. Even if Mr. Shipman's contention be granted that we know matter only in terms of the energy which it exerts, we must confess that there is a residuum, and this residuum of matter is the substance of or from which matter is formed.

The difficulty of the concept matter lies in the fact that it is not yet an ultimate generalization like energy and form, for it is not a simple but a complex idea. Matter is commonly defined as volume and mass, and so it is extended in some shape or other (i.e., it has form), and is possessed of energy. It is quite justifiable to look upon the energy exercised by the weight of a gravitating body as essentially the same as other energies; for the falling stone, the gushing water of cataracts, the pressure of a weight in a clock, etc., can do work as well as the heat of burning coal and electricity. On this point we agree with Ostwald. There is only this peculiarity that gravity is inseparable from mass. Its energy is localized and it can not be absolutely detached from the body to which it belongs except in portions by a change of position. When raising a stone we add to it a certain amount of energy which is given out again when it falls. The mass itself, however, remains the same and we have not yet succeeded in resolving any portion of mass into pure energy. Mass constitutes a kind of substratum which remains, and on its account, naturalists are justified in retaining the word "matter."

We deem it quite probable that matter has originated from ether, and that ether is the simplest form of existence.

We assume that ether is the stuff the material world is made of and that it has been changed into matter by condensation. In other words: energy somehow seizes upon ether and creates within it a rotation causing in the ocean of its originally homogeneous mass, innumerable little whirls, which with their swift currents produce among themselves the tension of gravity. Thus gravity may be the work of energy, and matter its product; but in that case we would mean by matter a certain energized form of the ether, and we would still retain the notion of a substratum, a quantity of something, a substance, a material.

Thus a final analysis of all material things would lead us to the assumption of a world-substance (which, from our present knowledge, appears to be the ether) as an ultimate substratum of all existence, itself imponderable and not possessing the properties commonly attributed to matter; but when condensed into whirls the ether acquires a tension decreasing with the distance in all directions, and creating a mutual attraction between any two sets of such whirls, which from *a priori* mathematical considerations should be directly proportionate to the product of both amounts of energy needed for their contraction and inversely to the squares of the distance between their centers,—and this would be the Newtonian formula for gravitation.

The problem of the origin and final dissolution of gross matter is not yet sufficiently matured for discussion, but the theory has lately been rendered more probable by the experiments of Ramsay, which promise to amplify our knowledge of matter, but even if the idea of the eternality of matter will have to be surrendered, we see as yet no chance for disposing of the word "matter," still less for disproving the existence of its reality. Evidence of the instability of matter will only modify the law of the conservation of matter into the wider generalization of the

conservation of substance. It is the idea of substance which we can not get rid of, and to be fair to the formulators of the law of the conservation of matter we must grant that they meant the conservation of substance. They simply meant to deny a creation from nothing; and we would say that all creation consists in a formation, or in other words, all processes are transformations.

* * *

In reducing all things, even the soul, to energy, Ostwald follows the principle of his great teacher Ernst Mach, who in one of his masterly expositions on the nature of cognition points out that the method of comprehending the unknown consists in defining it in terms of the known with which we are familiar. This is quite true if the known and the unfamiliar (i. e., the not understood) are homogeneous, but not if they are heterogeneous.

We accept Mach's principle as the quintessence of monism which consists in a unification of facts. But here is the salient point of difference between our conception of monism and the current interpretation of it, as we have pointed out on several occasions. We define monism as a unitary conception of the world. The cosmos is a great whole dominated by one principle that is consistent with itself. There are different aspects of it, as there are different conditions, and these different aspects are formulated by scientists as natural laws so called, but all natural laws are only one and the same law in different applications. The world is full of contrasts, but the constitution of the world, the entire system of its laws possesses no contradictions. Wherever we meet with a contradiction, it is apparent only and we are confronted with a problem. The problem is solved as soon as the contradiction has been overcome and a monistic interpretation found.

A unitary conception of the world is a demand of our

mind which, like the mariners' compass, has guided us in our search for truth, and it has heretofore proved true. We have good reason to believe that its reliability is well founded in the nature of things, which means that it not only possesses a subjective significance, but that it is ultimately rooted in the constitution of objective reality.

In contrast to our monism as a unitary conception of the world, there are other monisms which seek the unity of the world, not in the unity of truth, but in the oneness of a logical subsumption of ideas. Monists of this type produce systems whose unity is artificial, purely external and sometimes palpably erroneous, wherefore we designate their views as pseudo-monism.

Professor Ostwald, for instance, is satisfied to build his philosophy upon the concept of energy as its cornerstone, merely because he thinks it is the widest generalization possible; and there are other monists who select other generalizations, such as matter or spirit, as their foundation. This is not establishing a unitary view which preserves the contrasts that actually exist, and only removes the contradictions. This is twisting the facts into the philosophy of a single idea; it is henism,* not true monism. In other words, henism is the establishment of an external and indeed a wrong unity which does not do justice to the contrasts that actually exist, while true monism is a unitary conception which does not deny but explains the contrasts and shows them to be factors in one consistent system of truths.

It is characteristic of henistic thinkers to denounce all general concepts as mere abstractions with the exception of

* Henism is derived from the Greek εἷς, ἑνός.

We have repeatedly had occasion to call attention to henistic theories which go by the name of monism. See, e. g., our discussion of Professor Haeckel's monism in *The Monist*, Vol. II, p. 498, and especially in *The Open Court*, Vol. VII, p. 3528. Compare also *The Monist*, IV, No. 2, p. 228 and a brief review of "Haeckel's Theses for a Monistic Alliance" in *The Monist*, Vol, XVI, p. 120 f. It is natural that pseudo-monists look upon a true monism as dualistic, since it recognizes the existence of contrasts.

their fundamental notion, be it spirit, or matter, or energy, or God, or anything else. So to Hegel the most real thing is the absolute, to Schopenhauer it is the will, and to Ostwald, energy. We notice his complaint that the word energy may mean at the same time both the abstract notion and the concrete reality. Like all henists he overlooks the fact that the same is true of all abstractions. All generalizations are abstractions, and we insist that all abstractions denote realities,—if not real things, yet certainly real qualities, or something that is actually present in one way or another in different things. Abstractions are empty or unreal only to those who are incapable of thinking in abstract terms. To the trained thinker all general ideas have been deduced from experience and possess therefore a real value, they denote actualities.

It is characteristic of all pseudo-monistic theories (perhaps of most philosophies that go astray) to overlook the significance of form, which is *the most important of all abstractions*. We have insisted on this truth so much that we might characterize our own philosophy as the philosophy of form. Instead of trying to unify matter and energy, we insist that the oneness of the world is based upon the systematic unity of form—popularly speaking of the universality, the intrinsic necessity, and harmony of the laws of form. We are confronted with uniformities which are formulated as natural laws, and all uniformities constitute one great consistent system. Moreover, the whole of reality forms one inseparable unity of which all things are parts. No single thing can be taken out and be set aside as a thing in itself. There are no things in themselves. Everything is what it is only as a part of the whole, and this is true of all our abstractions. We classify our abstractions into hierarchies of genera and species, which procedure is possible in the world of objective existences only because there are uniformities, and we find that laws

of form dominate all changes and govern the formation of all beings.

Here appears the importance of the abstraction of form together with all the sciences of pure form, logic, mathematics, the algebra of thought, arithmetic, etc., which is the field of Kant's *a priori*, an idea which is now commonly but erroneously discredited, for all science, in fact every rational argument, is based upon purely formal thought which in its very nature is *a priori*.*

Our analysis of the objective world yields three abstractions which, each in its own way, are the widest generalizations; they are substance, energy and form, but form is the most important among them.

Man has become a rational being by his formal thought. The speaking animal develops reason, and human reason in contrast to the thinking faculty of brute creatures is distinguished by the ability of abstraction, i. e., by denoting in word-symbols the uniformities of nature. Formal thought (logic, arithmetic, mathematics) is always the backbone of abstract reasoning. A cat may miss one of the number of her kittens, but she can not count them. To think in abstract terms, to classify things as genera and species, to count and in general to formulate the uniformities of experience, to utilize this knowledge for the purpose of mastering his surroundings, is the privilege of man.

It is noteworthy on the one hand that all formal concepts such as number, geometrical figures, logical relations, etc., can be constructed without reference to actual things, by purely mental processes; and as such they exhibit methodical systems in which all relations are intrinsically necessary, or, as it has also been expressed, we arrive at conclusions which are uniquely determined. On the other hand we find that these purely mental constructions furnish

* Cf. on the subject the author's *Fundamental Problems, Primer of Philosophy,* and *Kant's Prolegomena.*

the frame work of our comprehension of nature, for the main laws of nature are identical with the highest generalizations of reason. This is Kant's problem, so splendidly treated in his Prolegomena.

* * *

We emphasize the significance of form and with it of formal thought, because the lack of its recognition must have been the cause of Professor Ostwald's anxiety to seek the solution of all problems in energy. All problems are problems of form. The terms "matter" (or better "substance") and "energy" are simply two denotations of existence, the former of reality (or thingishness) the latter of actuality, (i. e., the effectiveness of all actions or transformations); and the two ideas of actuality and reality are so closely interrelated as to render the words almost interchangeable. According to Ostwald it is sufficient that existence is actual, it need not be considered as real, but neither the actual nor the real can exist without the other. Yet by discarding either of the two we are very little helped because both terms denote the ultimate facts of the manifestation of existence. The terms matter and energy explain nothing and can explain nothing, for explanations are always the comprehension of a transformation. The terms matter and energy only denote that the objects under consideration are real and that the events are actual.

If energetics provided the correct solution, we would after all have to trace the different forms of energy, and if materialism were right, we would have to trace the forms of matter, and so matter as well as energy would in either case remain unanalysable ultimates, one denoting the reality of existence, the other the actuality of all changes. Wherever we turn we find that these notions of actuality (i. e., energy) and of reality (i. e., substantiality) explain nothing; they merely denote that we deal with objective

facts. Explanations are always due to a tracing of the formal aspect of phenomena.

Ostwald expects that from the standpoint of energetics all the sciences have to be recast, not only physics and chemistry but also history and economics, yea psychology too. The progress of civilization, e. g., should be regarded merely as "a transformation of energy." The quantity of energy, Ostwald claims, is not indifferent even in that sphere of nature which is void of valuation, but it counts also for man, only the situation is complicated, and "an amount of energy is, in general, the more valuable, the more completely it may be transformed for man's purposes" (p.513). He says that the reason why certain things with less energy, e. g., food-stuffs, are worth more than, e. g., coal is due to the mutability of the former, but it will be difficult to explain from Ostwald's theory how a diamond which contains little energy and is possessed of no great mutability can fetch so high a price.

* * *

What Professor Ostwald says of pseudo-problems is not to the point, and we can pass it over in silence, while his distinction between hypotheses and prototheses is not helpful. According to him the soul is a peculiar kind of energy, and this assertion would have to be regarded as a prototheses, (i. e., a preliminary thesis) not a mere hypothesis (i. e., an assertion that can neither be proved nor disproved because it deals with fictitious assumptions.) And the test for its being a prototheses consists in this that we can substitute for the term soul a value of energy, —as if an idea became true by being defined in terms of a measurable quantity of energy!

* * *

The duty of the scientist, and also of the philosopher among scientists, is not to subsume all generalizations

under one common head, but to construct a thought-picture of the world or of any special phenomenon which happens to be under consideration in well-defined terms for the purpose of describing it with accuracy in all its essential features. Mach calls it *"ein Nachbilden der Thatsachen."* This thought-picture should appropriately represent its analogous reality in such a way as to show thereby how things originate and how events take place through definitely determined transformations. We are very little helped by materialism when we are told that everything is matter, that bodies are matter, and that thoughts are merely a function of matter, and Professor Ostwald's energetics is not a whit better when it tells us that matter is energy, and that the soul too is only a factor of energy. This is no explanation of the nature of the soul; on the contrary it obscures the problem and introduces a misunderstanding of the work previously done by our predecessors.

Professor Ostwald rejects the theory of parallelism in psychology, and he refers to Leibnitz who insisted upon the difference between mechanical processes and consciousness, claiming that consciousness is not motion, and motion can never be turned into consciousness. We doubt whether Professor Ostwald ever gave a close attention to the problem which Leibnitz had under consideration, for if he had done so, he would never have propounded his solution that the soul is energy. He concedes to Leibnitz that psychic states shall not be regarded as matter in motion, but he sees no absurdity in their being a kind of energy.

He says in his *Vorlesungen über Naturphilosophie,* p. 396:

"I know no more convincing proof of the philosophical value of the world-conception of energetics than the fact that in its light this old problem loses all of its terrors. The difficulty arises simply from the assumption of Leibnitz, as well as Dubois-Reymond and

Descartes, that the physical world consists of nothing but matter in motion; of course in such a world, thought can have no place. In looking upon energy as the final reality we perceive no such impossibilities. We have seen in the first place that manifestations of nerve-control may be referred to processes of energy without contradiction, and we have seen that nerve-processes which are accompanied by consciousness are constantly combined with unconscious processes. I have taken the greatest pains to find any absurdity or unthinkableness in the supposition that consciousness is determined by definite kinds of energy. I have not been able to discover anything of the sort. As soon as we investigate the most important phenomena of consciousness we become at once convinced that they are dependent on energy, and to my mind it is no more difficult to think that motion is dependent on kinetic energy than that consciousness is dependent on the central nervous system."

Leibnitz's criticism of the mechanistic theory with which Professor Ostwald has become acquainted through Dubois-Reymond, hits Ostwald's energetics just as severely as any materialistic philosophy, and when Ostwald declares that he does not feel it, it only proves that he does not understand Leibnitz's argument.

If we bear in mind that the abstractions we make should denote exactly the value of the features which they describe, nothing more, nothing less, we must grant that motion means motion, not thought, not consciousness, not sensations. Accordingly we can not deduce from the abstract idea of motion anything that remotely resembles psychic activities. The soul with all that is implied thereby belongs to another set of generalizations. All the mechanical events in the world constitute a complete mechanical system, being all kinds of forms of motions and tensions which are transformed into one another. Nowhere can there be a gap, and all changes of place must be due to a push or a pull, never to a feeling, nor a thought, nor a state of consciousness, and *vice versa,* neither motions nor tensions can produce consciousness.

We will quote the passage in question. Leibnitz says:

"If we could imagine a machine the operation of which would manufacture thoughts, feelings, and perceptions, and could think of it as enlarged in all its proportions, so that we could go into it as into a mill, even then we would find in it nothing but particles jostling each other, and never anything by which perception could be explained."

The brain is such a machine. It manufactures thoughts, feelings, and perceptions. Now then, if we assume that the brain could be so enlarged in all its proportions that we could enter into it as into a mill and watch its operations we would see motions and tensions, states of kinetic and potential energy, pressures and counter-pressures, and their apparently insignificant motions setting free the pressures and changing states of apparent inactivity into work, but we would see no feelings, no sensations, no consciousness. And why not? Simply because feelings, sensations, and consciousness can not be seen; they can never be objects of sensation; they can not be touched by the hand or observed by any one of our senses. And why can they not be objects of sensations? Simply because they are not objects; they are subjective states.

Feelings can only be felt and it is obvious that we can feel our own feelings only, not the feelings of others. But while we could never see the feelings, nor sense them in any way, even if we could enter the workshop of the brain and watch the mechanism of consciousness in all its wonderful details, we could see some movements of this thought-machine which we would have reason to assume to be accompanied by feelings. The mechanism of the brain is complete. It is pull and push that produces motion, and there is no gap in the chain of mechanical events. Such is the nature of the objective world, of the Not-me, of things observable. We find there only transformations, only changes of matter in motion. If we knew nothing about existence but the data of our experience, if we did

not know ourselves, or if by some trick we could be prevented from becoming aware of our own existence as conscious beings, we would not know that there are such things as perception, sensation, feeling, sentiment, thought. We know of their existence only through self-observation, through the immediate fact of our own feelings. We have no direct knowledge of the feelings of others; we only assume that other bodies organized in the same way as we and behaving like ourselves under analogous circumstances have analogous feelings.

These considerations are the basis of the theory of parallelism which since the days of Leibnitz has been accepted by such psychologists as Herbart, Weber, Fechner, Wundt, Hering and others, and which is not a dualism, but true monism. For it must be understood that the recognition of a duality and pointing out of contrasts does not mean that there are two heterogeneous things, and that reality is a composition of two incompatibles. It simply means that existence is not a rigid unit, but a process, a state of action and reaction, which is necessarily polarized into contrasts. The inner condition and the outer manifestation are one reality. There are not subjective states which are nothing but psychic, and there are not objective realities which are nothing but forms of matter in motion. The term "parallel" refers to our abstractions, not to the realities themselves. In reality subject and object are one; subject is an existence as it appears to itself if viewed from within itself, and object, as viewed from the outside. I feel myself to be a sentient being, but to others I appear as a body of definite shape, moving about in space.

Though materialism and energetics are exactly in the same predicament, Professor Ostwald regards the former as untenable, the latter as well founded. The truth is that he keeps one measure for materialism and another for his

pet theory, energetics. He says in his *Vorlesungen über Naturphilosophie*, p. 397:

"If we know from experience that man's spirit is associated with the 'matter' of his brain, there is no reason why spirit should not be connected with all other matter. For the elements carbon, hydrogen, oxygen, nitrogen and phosphorus in the brain are no different from the same elements as they occur everywhere else on the earth; because of the transformation of matter they are constantly replaced by others whose origin is quite different as far as their action within the brain is concerned. Therefore if spirit is a property or effect of matter in the brain, then according to the law of the conservation of matter, it must, under all circumstances, be a property of the atoms assumed by the mechanistic theory, and stones, tables, and cigars must have souls as well as trees, animals and men. In fact, granting the assumption, this thought obtrudes itself so irresistibly that in later philosophical literature it is either recommended as correct (or at least as reasonable), or else a decided and insurmountable dualism between spirit and matter is erected in order to evade it."

This argument is as unfair as it is superficial, and it applies with equal force to energetics. There are as many different kinds of matter as there are different forms of energy. While the elements remain oxygen, hydrogen, carbon, etc., their combinations exhibit new qualities which do not exist in their separate states and originate through the new formations into which they are joined. In the same way motion is change of place, but the motion may be molecular such as heat, or molar such as the movement of mass, or pressure such as potential energy, etc. Ostwald's argument that if the action of brain matter is associated with consciousness we ought to attribute the same quality to the burning cigar, proves a boomerang in his hand, for what is true of matter in motion is true also of energy. It is astonishing that Professor Ostwald does not feel how hard he hits himself. He continues (*ibid.*, p. 397):

"Even this difficulty takes flight before energetics. While

matter follows the law of the conservation of the elements so that the amount of oxygen, nitrogen, etc., present in a limited space in a combined or uncombined condition can not be changed by any known process, yet in general it is possible for a given amount of energy to be converted into another without leaving a measurable residue of the first. Experience therefore in no way contradicts the idea that particular kinds of energy require particular conditions in order to originate, and that whatever amounts of energy are present can also disappear again altogether by means of conversion into other forms. This is the case with spiritual energy, that is, with unconscious and conscious nerve-energy."

No fond mother can be more blind to the faults of her own child while chiding the children of other people than is Ostwald with the child of his own nerve energy. We must abstain here from pointing out on the one hand how little we are helped by Professor Ostwald's declaration that everything is energy, and on the other hand how unsatisfactory his several solutions are, e. g., his theory of pleasure and pain, his conception of art, his definitions of good and bad,* etc., we will limit our further comments to a brief explanation of the problem which Professor Ostwald has failed to understand.

Our conception of energy denotes energy, nothing more, nothing less. We mean by it that particular feature of our experience which all forms of energy possess in common. Under the general concept of energy we subsume all the various kinds of energy, potential as well as kinetic, and we observe that one form of energy frequently changes into other forms and that without increasing knowledge we can guide these changes at will. Heat, light, electricity have been discovered to be forms of energy, i. e., they have been proved to be forms of motion and it is by no means impossible that there are forms of energy still unknown to us. But one thing is sure that however wonderful the different known and unknown forms of energy are or may

* These subjects are discussed by Professor Ostwald in his *Vorlesungen*, and we refer the reader especially to pp. 388 ff., 433 ff .and 450.

be, energy will always remain energy (a motion or a tension) and will never be something which is not energy. Feeling may be conditioned by a state of nervous commotion in the brain, but feeling is not energy; neither its nature nor its origin can be explained from the idea of energy. But while feeling is not energy, it may be associated with it as an accompaniment that appears under definite conditions.

We must remember that energy is an abstraction. It does not denote the whole of the world but only one definite feature of our experience. When the general terms in which we describe the objective world do not contain concepts under which the characteristic feature of consciousness can be subsumed, we must conclude that the objective world is not the whole of existence, but that there is a subjective side to it which for a description needs terms of its own.

We are compelled by the logic of our argument to assume that all objects, even those that are lifeless, are possessed of a subjective interior, but we will readily grant that the appearance of feeling depends upon organization. Stones may possess potential feeling, but we would refuse to say that they perceive the impression made upon them. There is no need of assuming that the burning cigar suffers pain. Things that have no organs of perception can not be regarded as sentient. In plants we can notice mere irritability but not sentiency in the sense that we possess it. Actual sentiency develops in an organ that stores up feelings in the form of memories, being thus enabled to note the impressions made upon it, to compare them to, to contrast them with, or subsume them under the memories of prior analogous impressions and so become aware of its feelings. If there are feelings in the unorganized portion of objective nature we can understand that they must be absolutely latent, because they are isolated. Feelings must

be felt in order to be actual feelings, and so even on the supposition that all objective existence is potentially subjective, we must grant that in inorganic nature there can not be any consciousness.

It can not be our plan here to offer a full exposition of all the problems which, in our conception, Professor Ostwald has failed to solve. We merely deem it our duty to point out his errors, and the way to their correct solution.

We have on other occasions (especially in *The Soul of Man* and in *Whence and Whither*) set forth our own view of the nature of the soul, the rise and significance of consciousness, the origin of mind, and kindred problems treated from the standpoint of the philosophy of science. It is very desirable that men of science turn to philosophy, and we recognize the good intentions of Professor Ostwald. Considering his high standing and his general proficiency which we fully appreciate, we regret to find him not sufficiently equipped for the philosophical task he has set himself. In spite of his merits in his own line of physical chemistry, his wide range of knowledge, his conspicuous success as an academic lecturer, and his many meritorious works on science, we must say that his methods are mistaken, his main conclusions untenable and his philosophy deficient.

If our exposition of the problems under discussion can be proved wrong we are ready for correction, but if it be of any assistance to Professor Ostwald and to other scientists who like him try to build up a philosophy of science, we would deem our labors gloriously rewarded and the main purpose of our philosophical work crowned with success.

EDITOR.

THE EVOLUTION OF CHRISTIANITY.[1]

[Professor Pfleiderer, one of the most prominent leaders of modern theology, a man who with all reverence for traditions is determined to admit the light that a scientific and critical research throws on the problems of religion, has lately published a series of books on the difficult subject of the origin of Christianity. His three latest works are *Die Entstehung des Christentums, Religion und Religionen,* and *Die Entwicklung des Christentums.* The last mentioned is just out and we owe it to the courtesy of the author that almost simultaneously with its appearance, we are able to present to our readers its leading ideas as expressed by the author in an introductory condensation. The three works in question have been published by J. F. Lehmann of Munich. Ed.]

IN spite of all that with a show of reason can be said to the contrary, I for my part am of the firm conviction that even theology will have to admit sooner or later an unreserved recognition of the principle of evolution to be rigorously applied in all the domains of Biblical and ecclesiastical history. In so doing—and I know that I still oppose an overwhelming majority,—theology will derive a great benefit, especially in the fact that it will then finally become of equal rank with the other sciences which took this step a century earlier; but also in the fact that the result will be a mitigation of the intrinsic antagonism between the different ecclesiastical tendencies, which have attained their present excessive intensity entirely through this antagonism, so that everywhere it is only dogmatism that contends against dogmatism,—the one, indeed, being always as narrow and exclusive as the other.

All this will be changed with the attainment of the evo-

[1] Translated from the German by Lydia Gillingham Robinson.

lutionary mode of thought, for that is like the magic spear of the legend which both inflicts wounds and heals them. It liberates thinking spirits from the heteronymous fetters of the past while it converts all the alleged absolute authority of the past into the conditional products and relative factors of evolution of its own time. On the other hand it also recognizes in the forms of belief and life which originated in the past and are foreign to us to-day, the natural manifestations of truth which are justified for certain steps in evolution,—the comparatively true intermediate steps through which the human spirit uplifts itself out of the fetters of nature into God's freedom,—and therefore it fosters regard and reverence for these ancient forms of faith. Because of this reverence, the evolutionary point of view, and only that, serves the exceedingly valuable purpose of all historical science, which consists in the ability to comprehend the roots of our present life and endeavor that were planted in the past, and to preserve their nourishing powers without permitting them to become fetters for our self-development in the present or for our ceaseless striving after the ideals of the future. "To conciliate reverence with lucidity, to deny the false and yet to believe and to reverence the truth," Carlyle, the historian and philosopher, has rightly pointed out as the task for which historical education will fit the people to-day. My latest works[2] have been devoted to this reconciliation, and in a still more recent one[3] I propose to sketch the development of Christianity up to the present day, not, to be sure, in the sense in which I might give a summary of ecclesiastical and dogmatic history, a sketch of all the material which has been collected into text-books, but I will bring out only those main points of the history of Christianity which are suited to show in what way, through what intermediate

[2] *Die Entstehung des Christentums* and *Religion und Religionen.*
[3] *Die Entwicklung des Christentums.*

steps and from what natural motives the Christianity of the New Testament has become the Christianity of to-day. This way is long, and the intermediate steps are many; but it is necessary that they be understood in order to appreciate the Christianity of the Bible in its distinction from that of the present, as well as the right of Christianity to-day,—the right which lies in the fact that it is the lawful fruit of the legitimate development of the Christianity of the Bible. Christianity would not be what it is, if it had not had its evolution through the nineteen centuries of which ecclesiastical history treats. But can we really think of an evolution here? Right in the title of this paper a problem is involved which we may not set lightly aside if we consider that not until the work of Baur of Tübingen within the last fifty years has the treatment of ecclesiastical history been seriously considered from the viewpoint of evolution either by the old Catholic or Protestant Churches or even by rationalists.

It has not been given serious thought by Catholics because Catholicism regards Christianity as a divinely given quantity and institution founded by Christ through the Apostles. The dogma of the Church is looked upon as a revealed unchangeable truth from the beginning, to which time only adds greater luster. The organization of the Church also, the episcopal office, the whole hierarchy with its head in the pope, is considered as founded by the Apostles and elaborated with their divine authority; but all changes in ecclesiastical history, they say, are only the manifold ways in which the truth and grace which are given in the Church have been attacked by the hostile world and the Devil, and always triumphantly vindicated. According to this view there is only an outward effect; internally nothing is changed. The Church remains ever what it is, a completed structure established in the world by God. No evolution is here, no internal development,

no separation into opposed factions, only vindication and constantly outspreading propagation of the continuously identical organization.

This naively optimistic conception was opposed by the old Protestantism with an equally naive pessimism resting upon the same assumptions. Here it was the writers of the Magdeburg Centuries who proceeded from the same assumption as the Catholic historians, i. e., that Christianity was given by God complete in the New Testament by a miraculous revelation as a perfect means of salvation and redemption. There is however the following difference: While Catholicism sees in the progress of history the ever completer conquest of the divine organization of the Church over the world, the old Protestantism reverses the matter and says: "Yes, the New Testament Christianity is the divine truth, but what have you made of it? You have perverted it to the opposite extreme! Not only has the Devil attacked the truth from without, but he has penetrated into the Church itself. He has displaced even its main article of justification by faith, and in the organization of the Church he has his hand entirely in the game. He has finally found his incarnation in the Pope as the 'Antichrist.'"

This is the pessimistic answer of the old Protestantism to the optimistic deification of the Church by Catholicism. Certainly the old Protestantism found itself in a contradictory position in so far as it accepted unconditionally the dogmas of the first five centuries, and believed in them as divine truths of the same Church which it considered so permeated and polluted by the Devil. And yet these dogmas arose at the same time in which the ecclesiastical customs, ritual, and organization developed. How remarkable that the Archenemy carried on his game in customs and organization, and in certain articles of faith, while in others he took no part,—and these the most important

doctrines of the Trinity, Incarnation, Original Sin, Atonement, etc., which are all looked upon as truth! This is an untenable inconsistency only to be explained by the historical status of the old Protestant critique of Church history.

Now rationalism was too enlightened to adopt this transcendental view of history which operated by means of the Devil. In place of the Enemy from the other world, rationalism set up the enemies of this world, the cunning priests who had themselves constructed their organization by lying and deceit, so that the whole had become a human structure. From this point of view the entire history of the Church appears as a play between error and violence, a game of human opinion, error, and blundering. This is the rationalist conception. Here too, evolution does not enter. The fundamental thought in the doctrine of evolution is that things develop from their beginnings by the intrinsic necessity of their nature, while with rationalism all is mere chance and caprice;—only, unfortunately, this or that pope had such ambitious thoughts, such false views and opinions. Of divine truth and divine control little enough can be found in Church history. This is called "pragmatic historiography" because an effort is made to bring to light the accidental motives of single individuals and so to find the spirit of the times. The "spirit of the times," however, was usually the spirit of the masters and the alleged motives of the various actors were invented by the historian himself. This view was no more objective than the pessimistic view of Protestantism or the optimistic glorification of the Church in Catholicism.

You see that within Catholicism, the old Protestantism, and this rationalism, there was no question of an evolution of Christianity. The thought of evolution which has entered into the science of history since the time of Herder and Hegel, and which to-day rules supreme in profane

history, has been brought also into the consideration of Church history by Baur. According to him Christianity is the religion of the divinity of man, the elevation of mankind to the consciousness of its spiritual unity with God and freedom in God. This is the new and peculiar feature of Christianity by virtue of which it stands above all other religions. This new religious principle was present in embryo in Jesus in his devout character, in his living faith in God, and his pure love for man, but it was still enveloped in the Jewish form of the Messianic concept and limited to the Jewish nation, which limitation of course is in contradiction to the idea of the religion of the divinity of man which must include all mankind. The universal religion of the spirit, therefore, in order to rise to the fullest consciousness of its individuality must first be freed from the narrow shell of the Jewish national and legal religion. This was the work of the Apostle Paul who, however, opposed for this reason the original Jewish-Christian faith of the primitive congregation. So evolution from the beginning has advanced through opposition which in no case contained the whole pure truth. This antagonism had to be overcome by a higher unity, the Johannean interpretation. So also in the farther course of history a certain solution had each time become the germ of new problems which demanded new struggles; only thus, through constant separation in various directions, each of which possessed for its time a comparative truth and justification,—only by means of this evolution which advanced step by step by opposition, has Christianity really become what according to its own idea it has been from the beginning. This is Baur's conception of Church history as the history of the evolution of the Christian idea within the Church.

But this is not the prevalent conception in theology to-day. It has been put in the background by the Ritschl-Harnackian interpretation of Church history which we

might designate as an intensification of the old Protestant pessimism. While according to the latter the Christianity of New Testament times was perfect but degenerated greatly after the apostolic period, so on the other hand according to Ritschl and his followers, the perfect essence of Christianity was exclusively contained in the Gospel of Jesus as portrayed by the first three evangelists; and just for this reason Ritschl believes the man Jesus must be looked upon as God, because he was the only true revealer of the will of God. According to him the corruption and indisposition of Christianity began immediately afterwards, for already Paul had distorted the pure Gospel of Jesus by the intrusion of Pharisaic theology and the doctrine of the sacrament, while it suffered even more by John's doctrine of the divine Word which became flesh in Jesus. The Greek philosophy thus introduced had then so completely effaced and overgrown the purity of the Gospel in the minds of the Church Fathers that the entire Church history was really nothing else than the continuous process of the demoralization and secularization of Christianity, whose true essence was again discovered by the latest theology, namely that of Ritschl. This radical pessimistic judgment to-day is the dominant view of Church history and pretends to count as the final word of modern science.

To swim against so powerful a current is certainly no pleasant task, but it must be done where such fundamental convictions are at stake. I will therefore attempt as briefly as possible to give you categorically the reasons why I can not hold the view of Church history which has just been described.

Above all it seems to me to contradict the system of evolution which otherwise prevails universally in the science of to-day. By evolution we understand the legitimate and destined development in which everything is both fruit and seed at the same time, each single phenomenon being

conditioned by its predecessor and conditioning future ones. If this is true of history as well, then there can be no absolutely perfect point of history which could be made an exception to the universal law of spacial and temporal restriction and limitation of everything that has come into existence. But least of all can any perfect thing be found at the beginning of an evolution series where the constructive new fact is naturally most intimately connected with the old, and its individuality is most imperfectly brought to light; therefore it must gradually evolve out of this initial development together with the former in order to most fully manifest its distinctive features. So of course we no longer believe to-day that man already corresponded to his ideal at the time of his first appearance on earth; on the contrary we are convinced that he was farthest removed from this at the beginning, that he was then most deeply submerged in the rough animal nature, and that only in the course of millenniums has he developed to the spiritual freedom which distinguishes him as man. Should then the history of Christianity make an exception to this universal rule which has everywhere been confirmed by experience in the life of nature and of history? Should perfection then form the pure realization of its being at the first beginning, and everything that followed have been only wretched degeneration, senseless confusion and decadence? I confess that this view seems to me to contradict the thinking intelligence which is founded upon the analogy of experience, just as much as it contradicts devout faith in the all-ruling providence of God.

But, some will say, we cannot come to a decision here from general assumptions but only from definite scientifically investigated facts. All right! Let us confine ourselves to facts but to actual and not imaginary ones. Then we will stumble at once upon the doubtful fact that very different answers are given to the question as to wherein

really consists the Gospel of Jesus with which the essence of Christianity should cover itself. If one glances over the entire literature which has been written on the life of Jesus within the last half century he will receive the impression that the old question of dispute which gave trouble even to the Apostle Paul (2 Cor. xi. 4) is not yet settled in so far as every author commends a different Jesus, a different Gospel, and a different spirit as the only true ones. Must not the opinion be forced upon us that it is finally rather the authors' own spirit, their own gospel and their own ideal of Jesus that they read into the Gospels and with pardonable self-deception consider the result of their historical research? No one will be surprised at this who knows the character of our sources, and who considers that in our Gospels the modifications and several advances of the communal faith have been successively precipitated in layers, lying now on top of one another, now side by side, and have greatly enriched, transformed, embellished into the supernatural, and spiritualized into the ideal the original features of their Christ-conception. Under the existing conditon of the sources, none of which date back to the time of Jesus himself, who dares assert with certainty what the historical foundation of this varied traditional material has been,—what Jesus really believed and taught, desired and accomplished? But if the person and Gospel of Jesus is an open question, yes, if it is the most obscure point in the history of Christianity, then the point of departure and the criterion for judgment in regard to the essence and history of Christianity can not be found in it. Because of the difficulty of arriving at a positive conclusion it is of course not impossible to try at least how near we may come to historical probability in these things. I too have made this attempt, and two years ago published the results of my investigations in lectures on the origin of Christianity. I shall take the liberty of referring my readers to the con-

clusions which I made at that time. To-day I will only select this much of that discussion: If anything in the Gospel story can be looked upon as well attested it is this, that the prediction of the approach of the kingdom of God was the heart of Jesus's preaching, and that by that expression he meant the same as his countrymen and contemporaries understood,—namely, the crisis brought about by divine miracle, which would put an end to the present miserable condition of the world and would represent a new order of things for Israel to the advantage of the poor and devout, the early realization of the apocalyptic ideal of the sovereignty of God. This expectation of the approach of the kingdom of God had for its assumption the fundamental pessimistic view that the world as it is to-day is in a God-forsaken desperate condition under the control of the enemies of God, the Devil and demons, whose operations were to be seen in all the ills of the body and soul, and whose instruments, in all oppressors of the pious,—the godless Jews and the pagan Romans. This crude dualism was foreign to the earlier religion of Israel, but had arisen in the last centuries under the influence of the Persian religion and under the afflictions of the political lot of the Jews, as the natural reflex of a pessimistic temper which despaired of reality and looked for the remedy only from the destruction of the present and the beginning of a new world created by divine miracle. From this dualistic pessimistic temper arose the various apocalyptic writings; from this also were produced various Messianic national movements started from religious and political motives before and after the time of Jesus. In the first years of our era Judas Gaulonites had arisen in Galilee and collected a large number of followers around his Messianic banner. Then in Judea appeared John the Baptist with his message of the approaching kingdom of God and with his call to repentance. In his footsteps trod Jesus and repeated literally

his proclamation of the kingdom of God which was at hand. For this very reason it can not be doubted that he understood by these words the same as did the Baptist and all Jews. Nothing was farther from his intention than to found a new religion, to announce a new God, to overturn the law and the prophets; on the contrary he wished to fulfil them. He was inspired by the belief that the God of his fathers would not delay longer in this time of extreme need to fulfil the promises of the prophets to his people, to put an end to the miserable condition of the world then existing, and to advance the longed-for redemption and deliverance. To prepare the people for this he considered to be his calling as had John the Baptist before him, but the way in which he sought to fulfil this calling was altogether new. He did not strike the threatening note of a sermon on God's fearful judgment day, but that of compassionate, consoling, and uplifting love. He pitied the masses of the people whom he saw mistreated and abandoned like sheep without a shepherd. This distress of his people stirred him to the heart and pointed out to him the way of his prophetic calling. He did not wish to separate himself from the unclean and sinful mass of people as did the arrogant Pharisees and the timid Essæans, nor like John did he retire into the desert and wait until the multitude came to him; but everywhere he followed the people, sought them in the schools on the Sabbath and at their work during the week, permitted himself to be called to beds of sickness in order to heal body and soul by his comforting word, and did not scorn to sit together with the accursed publicans at the common table. This friendliness, the love which seeks and saves, was the new and individual element in the work of Jesus,—a revival of the best spirit of the prophets, of Hosea and Jeremiah, but strengthened by the distress of the time, its deep and feverish apocalyptic tension. In Jesus were closely united the heroic

faith in the nearness of the saving act of God and his redeeming kingdom, and the force of compassionate love to begin with the salvation and redemption of individuals. With the eye of confiding love he still saw the glimmering sparks of good in sinners who had been cast aside by the righteous; in their longing for salvation he saw its possibility and at the same time the challenge to him who had the power not to quench this flickering wick but to kindle it by compassionate love, by the comforting word and act of healing. On the other hand he used sharp words of criticism and judged the self-righteous who boasted of their external legalism, and were unmerciful towards those less punctilious. Against this system of justification by the works of the law, against the sham religion of external ceremonial practices, purifications, abstinence, and sacrifice, Jesus stepped forth with severe words because to him religion was true only when it sprang from the heart, and was then actualized in ethical activity of the virtuous. This was indeed a new spirit, the kernel of a new religion which is as far above the legalized Judaism as it is above the lawless naturalism of the Gentiles. Both are vanquished by the religion of holy love which judges the sin but redeems the sinner, which recognizes the will of God as unconditional law, but subordinates it to love's own free impulse. In so far it may well be said that in the personally devout temperament of Jesus the religion of the divinity of man, the indwelling of the divine in the human spirit has been present like a germ. Only we must not understand that the new religious principle whose first dawn we may perceive in the saving power of Jesus had already come to a clear conception in his consciousness or to a definite expression in his preaching so that the Gospel he proclaimed would perfectly coincide with the true essence of Christianity. In order to be able to maintain this we would have to close our eyes to the most evident facts.

The fact is that the apocalyptic expectation (which Jesus also shared) of the final coming of the kingdom of God, has for its assumption the crudest dualism between a remote God and the actual world as God-forsaken and governed by diabolical powers,—a dualism which is the opposite of the inner union of God with men, so essential to the Christlike religion of the divinity of man. The fact is that according to the apocalyptic idea of the kingdom of God (which Jesus also shared) it was limited to the Jewish people, therefore Jesus only realized that he was sent to the lost sheep of the house of Israel; the Gentiles are excluded from this kingdom or can receive only such a share in its blessings as the dogs who receive but the crumbs from their master's table. And as this kingdom is a nationally Jewish kingdom so it is also an earthly state of happiness; it promises to the devout as a reward for their present sacrifices the hundredfold enjoyment of corresponding blessings. Such a temporal and eudemonistic hope of reward may be a strong incentive to ethical action, but it is not an especially pure and exalted one. Now it is very clear indeed that this temporal kingdom of God that the Jews looked for is very different from the universal and spiritual kingdom of God of our Christian faith, and this difference could have been so often overlooked, only because we unconsciously read the latter interpretation into the older Gospels (in the Gospel of St. John it had, to be sure, already replaced the earlier conception). It cannot be said that the difference is only one of theoretical conceptions without practical religious and ethical significance. On the contrary the apocalyptic expectation of the early end of this present world and the miraculous crisis of the future one, naturally engendered a feeling of transitoriness out of sympathy with the existing order and labors of human society. Therefore the undeniable ascetic features of the evangelical ethics,—its demand upon renunciation of prop-

erty, trade, and family ties; its indifference to state, law and culture; all this must have been natural and beneficial for that time of the great crisis and powerful struggle of the new ideal against the ancient world. But how the highest ideal of Christian ethics can be found in this asceticism and hostility to culture is hard indeed to understand. Finally it is an undoubted fact that Jesus has made the spiritualization of the law in the moral sense the most prominent feature, but for this very reason he did not put aside the authority of the whole Mosaic law, but on the contrary confirmed its importance in every iota. He teaches that man should observe the one phase (the ethical) and not neglect the other (the ceremonial). If the Christian Church had persevered in this view of Jesus, it would never have arrived at that independent morality which alone corresponds to the religion of the spirit. It was the service of the Apostle Paul, who to-day is called the perverter of the Gospel of Jesus, that Christianity has become freed from the fetters of the Mosaic law and has become conscious of the freedom of the children of God.

Whoever takes into consideration impartially and honestly this actual charcteristic of the ethics of Jesus and his prediction of the kingdom according to the three first evangelists, will no longer be surprised at the further fact that the object of the faith of the Christian community since its earliest beginning has never been the earthly teacher Jesus, but always and exclusively the divine Christ-spirit,—either as the Son of man who according to the apocalyptic expectation is to come on the clouds of heaven to establish his kingdom upon earth; or the Son of God and Lord-spirit, who according to Paul was sent down from heaven in human form to save a sinful world by his death and resurrection; or the Logos and only-begotten Son of God who according to John has brought light and life to the world by his advent in the flesh. All of this is

at bottom only the differently enunciated expression for the personified ideal of the divinity of man in which accordingly the kernel of the Christian faith has consisted from the beginning until to-day. But that this profound idea of the divinity of man which is essentially a general truth realized throughout the whole history of mankind was at first portrayed only in the mythical form of one supernatural miraculous figure existing at one definite time and unique of its kind,—that indeed was a defect, a disguise of the real truth. However it was not at all for this reason a corruption of a better knowledge which had previously existed, but the unavoidable expression of the first childlike steps of the evolution of Christianity;—the figurative integument of the purely spiritual truth. This integument was unavoidable because the new idea of the divinity of man, of the indwelling of the divine in the human spirit, was in entire contradiction to the presupposed crude dualistic world-conception commonly accepted by the entire world of antiquity, Jew as well as Gentile. To reconcile this contradiction, to overcome the ancient dualism not only practically in the imagery of the faith and cult but also theoretically in the sensible thinking of the truth of the divinity of man, that was the problem which naturally could not be solved at one stroke but to the solution of which the whole evolution of Christianity through the millenniums was and still is necessary.

It is incontestable, to be sure, that Greek philosophy cooperated in the solution of this problem, that the thoughts of Platonism and Stoicism, of Neo-Pythagorism and Alexandrianism exercised a more or less direct influence upon Christian theology. Yes, we may go still farther and dare to suppose that even the contemplative wisdom of India also influenced Christianity. Not only the childhood legends of Luke have their conspicuous analogies in the Buddhist and Brahmanistic legends but even

the central idea of the Christian faith, the incarnation of the deity, and deification of humanity, had its home in India, where it was entirely unknown to Judaism and had only the most remote echoes in Greece in single myths and certain philosophical speculations. Granted then that to the origin and evolution of Christianity not only the Hebrew prophets but also the sages of India and Greece have made generous contributions, still I can not understand why this fact should be called a perversion of Christianity. "Is God the God of the Jews only? Is he not also of the Gentiles? Yes of the Gentiles also," said Paul in the epistle to the Romans (iii. 29). Ought we then not to be ashamed to remain so far behind the insight of this apostle that we recognize as divine truth only that which comes from the Jews, but reject all which originates in our Indogermanic ancestors as godless error? I at least confess that to me the former seems much too narrow and paltry a view of the divine revelation and administration of the world when it is limited to the Jewish people, and the noble race of the Indogermanics, our own ancestors, are regarded as entirely God-forsaken and all their profound thinkers and sages are looked upon as heretics outside of the Christian pale.

But now even the influence of Greece upon the Christian Church is looked upon as harmful because its consequences are pointed out in a series of pathological phenomena called by the names of intellectualism, mysticism, and moralism. Now it is my opinion that the intellectual, mystical, and moral (that is, thought, feeling, and volition) belong together as a matter of fact in Christianity as in every religion, but that according to the particular capacity of the individual and the nation now one and now the other side will naturally triumph. In this fact there is nothing pathological in so far only as the tendencies in one direction are complemented by the opposite as was

always the case in Christianity. The Greeks were pre-eminently adapted for the intellectual development of Christianity. Was this then a detriment? Or on the contrary was it not necessary if Christianity were to take its place in the ranks of ancient civilizations? If to-day the theologians of Ritschl's school permit themselves to find fault with the Church Fathers because they indulged in metaphysics, they would better first furnish proof that the Christian religion was and still is able to exist without a metaphysical world-conception.

That the Greek theologians were partly in error in their subtle and artistic speculations is of course true, but Greek philosophy is much less to blame for this than the supremely unphilosophical mythology of the faith of the community which at that time was as difficult to reconcile with intelligible thought as it is to-day. Especially must we not overlook the fact that upon the ground of the ancient dualistic world-conception the Christian truth of the divinity of man may be maintained only because it was rescued in the enchanted world of those early days, and was clad in the secret of half mythical, half philosophical dogmas. It remained concealed in this shell until minds were matured enough to comprehend it in its pure and universal truth without this disguise. But meanwhile the devout spirit contrived to make sure of the presence of the divine in immediate feeling and in the symbolical conception of worship. In this way arose "mysticism" without which no living religion can be imagined, least of all that of the divinity of man. But the miraculous, which to be sure still clings to it, in part corresponds to just that childishly immature degree of development which could illustrate the presence of the divinely spiritual only through a sensuous medium; it might be called a disease if one wished to consider the childish absence of distinction between the spiritual and sensuous, as abnormal.

Finally as far as the censured "moralism" is concerned it can only be found in the objectionable sense where the moral has been severed from all incentive by religious convictions and sentiments. Of this there is no evidence in early Christendom. On the contrary, the development of Christian ethics from the beginning followed in the closest connection and exactly parallel with that of dogmatic thought and cultural mysticism. To the supernatural secret of dogma and ritual of worship corresponded the supernatural sanctity of the ascetics who held that the ideal of a close union with God could be attained only in separation from the godless world and in the annihilation of the life of the senses. The moral power of their asceticism had a purely religious incentive; and if to-day we call the manner of its manifestation onesidedly negative and barren, yet we may not forget that it was surrounded by the decadence of the ancient world and that it took with literal seriousness the evangelistic ideal of perfection.

The Roman world adopted the entire Christianity of the Grecian Church — dogma, worship, and ethics, but added thereto a new and important element. With their hereditary energy and commanding nature the Romans built up Christianity into an organized community of the Church according to the pattern of the Roman state. The heavenly hierachy of the world of spirits which had its head in Christ was to correspond to the earthly hierarchy which had its head in the Roman Church as its pattern and instrument; and as the God-man of dogma stands above natural humanity, so also stands his earthly organization, the hierachy of the Church, over the natural world and in opposition to the world as the holy nature is opposed to the sinful, but at the same time with the pretension to dominion over it as the Lord of heaven is supreme over the earth. The striving after the realization of this ideal imbued the Middle Ages. The proof of its unattainableness and harm-

ful effects led to a rupture with the ecclesiastical form of Christianity as it had previously existed in faith and life.

The Reformation of the sixteenth century was the decisive turning point of the new epoch of Christianity, not a reversion to its primitive form, from whose ascetic ideal the reformers were much farther removed than the Catholic Church had ever been. The crisis affected the kernel of the Christian faith; the divinity of man was drawn out of its ecclesiastical remoteness and supernaturalism to the nearness of man's every-day life. The Germanic temperament felt the direct presence of the divine spirit in its inmost soul, and supported upon this Archimedean point it began to shake the world of the Middle Ages to its foundations. At first the transformation was consummated in the directness of the pious self-consciousness which perceived its freedom in God; then in the reorganization of the moral world, of the family, society and governments, which having become aware of their intrinsic divine worth released themselves from ecclesiastical fetters. Thus the old ecclesiastical ideas of the godlessness of natural man remained unchanged by the supernatural God-man and his one definite work of salvation; but the contradiction between this intellectual union and practical emancipation was not adhered to permanently. So upon the old ecclesiastical Protestantism followed the new Protestantism which in its enlightenment broke with all ecclesiastical dogmas but then again bethought itself of the truth of the Christian religion which had been hidden under the covering of these dogmas in order to realize more clearly and more perfectly than before the truth of the divinity of man in new forms of independent thought and of the moral life of human society. This is the problem of Christendom to-day, as it is stated for us in the natural and completely consistent evolution of the entire history of Christianity.

BERLIN, GERMANY. OTTO PFLEIDERER.

EMPEDOCLES; THE MAN, THE PHILOSOPHER, THE POET.*

LIFE.

THE philosopher Empedocles, according to the common tradition of antiquity, was born at Agrigentum in Sicily, and flourished just before the Peloponnesian war, the contemporary of the great Athenians about Pericles. He might have heard the *Prometheus* in the theatre of Dionysus and have talked with Euripides in the Agora; or have seen with Phidias the bright Pallas Athene on the Acropolis; or have listened in the groves beyond the city while Anaxagoras unfolded to him those half-spiritual guesses at the nature of the universe, so different from his own. He might: but the details of his life are all too imperfectly recorded. The brief references in other philosophers and the *vita* of Diogenes Laertius contain much that is contradictory or legendary. Though apparently of a wealthy and conservative family, he took the lead among his fellow citizens against the encroachments of the aristocracy; but, as it seems, falling at last from popular favor, he left Agrigentum and died in the Peloponnesus—his famous leap into Mount Aetna being as mythical as his reputed translation after a sacrificial meal. . . . But time

* The last number of *The Monist* contains a translation of the Fragments of Empedocles in English verse by Professor Leonard, a labor which so far as we know has never before been undertaken. In an article on this prominent Greek thinker our readers will find a clue to the significance of one of the most important philosophical systems of antiquity.—ED.

restores the exiles: Florence at last set the image of Dante before the gates of Santa Croce; and now, after two thousand years, the hardy democrats of Agrigentum begin to cherish (so I have read) the honest memory of Empedocles with that of Mazzini and of Garibaldi.

PERSONALITY.

The personality of this old Mediterranean Greek must have been impressive. He was not only the statesman and philosopher, but the poet. And egotistic, melancholy, eloquent[1] soul that he was, he seems to have considered himself above all as the wonder-worker and the hierophant, in purple vest and golden girdle,

> "Crowned both with fillets and with flowering wreaths;"

and he tells us of his triumphal passage through the Sicilian cities, how throngs of his men and women accompanied him along the road, how from house and alley thousands of the fearful and the sick crowded upon him and besought oracles or healing words. And stories have come down to us of his wonderful deeds, as the waking of a woman from a long trance and the quite plausible cure of a madman by music. Some traces of this imposing figure, with elements frankly drawn from legends not here mentioned appear in Arnold's poem.

WORKS.

Of the many works, imputed to Empedocles by antiquity, presumably only two are genuine, the poems *On Nature* and the *Purifications*; and of these we possess but the fragments preserved in the citations of philosopher and doxographer from Aristotle to Simplicius, which,

[1] From Empedocles, indeed, according to Aristotle, the study of rhetoric got its first impulse. Cf. Diels's *Gorgias und Empedocles* in *Sitzungsberichte d. K. P. Akademie d. Wissenschaften*, 1884.

though but a small part of the whole, are much more numerous and comprehensive than those of either Xenophanes or Parmenides. It is impossible to determine when the poems were lost: they were read doubtless by Lucretius and Cicero, possibly as late as the sixth century by Simplicius, who at least quotes from the *On Nature* at length.[1]

HISTORY OF THE TEXT.

The fragments were imperfectly collected late in the Renaissance, as far as I have been able to determine, first by the great German Xylander, who translated them into Latin. Stephanus published his *Empedoclis Fragmenta* at Paris in 1573. But not till the nineteenth century did they get the attention they deserve, in the editions of Sturz (1805), Karsten (1838), Stein (1852), and Mullach (1860), which show, however, confusing diversities in the readings as well as in the general arrangement. Each except Stein's is accompanied by Latin translation[2] and notes. But our best text is unquestionably that of Hermann Diels of Berlin, first published in 1901 in his *Poetarum Philosophorum Fragmenta,* and subsequently (1906), with a few slight changes and additions, in his *Fragmente der Vorsokratiker.*

TRANSLATIONS.

As said above, there are several translations into Latin; all that I have seen being in prose, and some rather loose for the work of distinguished scholars. The late P. Tannery gives a literal French translation in his work on Hellenic Science, Diels in his *Fragmente* one in German, Bodrero in his *Il Principio* one in Italian, and Burnet and Fair-

[1] The writings of Democritus are conjectured to have been lost between the third and fifth centuries.

[2] I have not seen the original of Sturz's edition; but I gather from references in my reading that it contains a translation.

banks in their works on early Greek philosophy literal English translations, of which the former's is the better. There is one in German hexameters from the earlier decades of the last century; and a few brief selections in the English hexameters of W. C. Lawton may be found in Warner's *Library of the World's Best Literature.* Probably Diels does most justice to the meaning of Empedocles; none assuredly does any kind of justice to his poetry.

THE IDEAS OF EMPEDOCLES.

We can reconstruct something of Empedocles's system out of the fragments themselves and out of the allusions in the ancients; yet our knowledge is by no means precise, and even from the earliest times has there been diversity of interpretation.

The philosophy of the *On Nature* may be considered as a union of the Eleatic doctrine of Being with that of the Heraclitic Becoming, albeit the Sicilian is more the natural scientist than the dialectician, more the Spencer than the Hegel of his times. With Parmenides he denies that the aught can come from or return to the naught; with Heraclitus he affirms the principle of development. There is no real creation or annihilation in this universal round of things; but an eternal mixing and unmixing, due to two eternal powers, Love and Hate, of one world-stuff in its sum unalterable and eternal. There is something in the conception suggestive of the chemistry of later times. To the water of Thales, the air of Anaximenes, and the fire of Heraclitus he adds earth, and declares them as all alike primeval, the promise and the potency of the universe,

"The fourfold root of all things."

These are the celebrated "four elements" of later philosophy and magic. In the beginning, if we may so speak of a vision which seems to transcend time, these four,

held together by the uniting bond of Love, rested, each separated and unmixed, beside one another in the shape of a perfect sphere, which by the entrance of Hate was gradually broken up to develop at last into the world and the individual things,

"Knit in all forms and wonderful to see."

But the complete mastery of Hate, means the complete dissipation and destruction of things as such, until Love, winning the upper hand, begins to unite and form another world of life and beauty, which ends in the still and lifeless sphere of old, again

"exultant in surrounding solitude."

Whereupon, in the same way, new world-periods arise, and in continual interchange follow one another forever, like the secular æons of the nebular hypothesis of to-day.

Moreover, Empedocles tells us of a mysterious vortex, the origin of which he may have explained in some lost portion of his poem, a whirling mass, like the nebula in Orion or the original of our solar system, that seems to be the first stage in the world-process after the motionless harmony of the sphere. Out of this came the elements one by one: first, air, which, condensing or thickening, encompassed the rest in the form of a globe or, as some maintain, of an egg; then fire, which took the upper space, and crowded air beneath her. And thus arose two hemispheres, together forming the hollow vault of the terrestrial heaven above and below us, the bright entirely of fire, the dark of air, sprinkled with the patches of fire we call stars. And, because in unstable equilibrium, or because bearing still something of the swift motion of the vortex, or because of fire's intrinsic push and pressure—for Empedocles's physics are here particularly obscure—this vault begins to revolve: and behold the morning and the even-

ing of the first day, for this revolution of the vault is, he tells us, the cause of day and night.

Out of the other elements came the earth, probably something warm and slimy, without form and void. It too was involved in the whirl of things; and the same force which expels the water from a sponge, when swung round and round in a boy's hand, worked within her, and the moist spurted forth and its evaporation filled the under spaces of air, and the dry land appeared. And the everlasting Law made two great lights, for signs and seasons, and for days and years, the greater light to rule the day, and the lesser light to rule the night; and it made the stars also.

The development of organic life, in which the interest of Empedocles chiefly centers, took place, as we have seen, in the period of the conflict of Love and Hate, through the unceasing mixing and separation of the four elements. Furthermore, the quantitative differences of the combinations produced qualitative differences of sensible properties. First the plants, conceived as endowed with feeling, sprang up, germinations out of earth. Then animals arose piecemeal—he tells us in one passage—heads, arms, eyes, roaming ghastly through space, the chance unions of which resulted in grotesque shapes, until joined in fit number and proportion, they developed into the organisms we see about us. In another passage we hear how first rose mere lumps of earth

"with rude impress,"

but he is probably speaking of two separate periods of creation. Empedocles was a crude evolutionist.[2]

His theory of the attraction of like for like, so suggestive of the chemical affinities of modern science; his theory

[2] Some portions of the above paragraphs are translated and condensed from Zeller, some others from Vörländer, *Geschichte der Philosophie*, I. Band, Leipsic, 1903.

of perception, the earliest recognition, with the possible exception of Alcmäon of Croton, of the subjective element in man's experience with the outer world; and his affirmation of the consciousness of matter, in company with so many later materialists, even down to Haeckel, who puts the soul in the atom, are among the most striking ideas of Greek philosophy.

Behind all the absurdities of the system of Empedocles, we recognize the keen observation, insight, and generalizing power of a profound mind, which, in our day with our resources of knowledge, would have been in the forefront of the world's seekers after that Reality which even the last and the greatest seek with a success too humble to warrant much smiling at those gone before.

THE POETRY OF EMPEDOCLES.

Empedocles and his forerunner Parmenides were the only Greek philosophers who wrote down their systems in verse; for Heraclitus had written in crabbed prose, and Xenophanes was more poet-satirist than poet-philosopher. Lucretius, the poetical disciple of Empedocles (though not in the the same degree that he was the philosophic disciple of Epicurus), is in this their only successor. Contemporary reflective satire and the metrical forms of the Orphics may, as Burnet conjectures, have suggested the innovation; but both Parmenides and Empedocles were poets by nature, and I see no reason why they should not naturally and spontaneously have chosen the poet's splendid privilege of verse for their thought.

The Ionic dialect of Empedocles's hexameters, and occasionally even his phrase, is Homeric; but in mood and manner, as sometimes in philosophic terminology, he recalls the Eleatic. Parmenides had written:

> "And thou shalt know the Source etherial,
> And all the starry signs along the sky,

And the resplendent works of that clear lamp
Of glowing sun, and whence they all arose.
Likewise of wandering works of round-eyed moon
Shalt thou yet learn and of her source; and then
Shalt thou know too the heavens that close us round—
Both whence they sprang and how Fate leading them
Bound fast to keep the limits of the stars....
How earth and sun and moon and common sky,
The Milky Way, Olympos outermost,
And burning might of stars made haste to be."*

And it is as if he were addressing the Agrigentine and bequeathing him his spiritual heritage; and we might add thereto those verses of another poet of more familiar times:

"And thou shalt write a song like mine, and yet
Much more than mine, as thou art more than I."

For, although Empedocles has left us no passage of the gorgeous imagination of Parmenides's proem,[1] the *ἵπποι ταί με φέρουσιν*, his fragments as a whole seem much more worth while.

He was true poet. There is first the grandeur of his conception. Its untruth for the intellect of to-day should not blind us to its truth and power for the imagination, the same yesterday, to-day and perhaps forever. The Ptolemaic astronomy of *Paradise Lost* is as real to the student of Milton as the Copernican to the student of Laplace, and an essential element in the poem. The seven circles of the subterranean Abyss lose none of their impressiveness for us because we know more of geology than the author of the *Inferno*. The imagination can glory in the cross of Christ, towering over the wrecks of time, long after the intellect has settled with the dogmas of orthodoxy. And an idea may be imposing even for the intellect where the intellect repudiates its validity. A stupendous error like the Hegelian logic of history argues greater things for

* Parmenides, fr. 10, 11, Diels, FV.

[1] Diels, *FV*. Arnold has borrowed from it one of the best lines of *Empedocles on Aetna*:

"Ye sun-born Virgins! on the road of truth."

the mind of man than any truth, however ingeniously discovered, about the cat or the cuckoo. And the response of the soul is a poetic response, the thrill and the enthusiasm before the large idea. The poet's conception is impressive to imagination and intellect: we stand with him amid the awful silence of the primeval Sphere that yet exults in surrounding solitude; but out of the darkness and the abyss there comes a sound: one by one do quake the limbs of God; the powers of life and death are at work; Love and Hate contend in the bosom of nature as in the bosom of man; we sweep on in fire and rain and down the

"awful heights of Air;"

amid the monstrous shapes, the arms, the heads, the glaring eyes, in space, and at last we are in the habitable world, this shaggy earth, this sky-roofed cave of the fruitful vine and olive, of the multitudinous tribes of hairy beasts, and of men and women,—all wonderful to see; for Empedocles is strikingly concrete. But the æons of change never end; and the revolution, as we have seen, comes full circle forever.

There is too the large poet's feeling for the color, the movement, the mystery, the life of the world about us: for the wide glow of blue heaven, for the rain streaming down on the mountain trees, for the wind-storm riding in from ocean, for

"Night, the lonely, with her sightless eyes,"

for the lion couched on the mountain side, the diver-bird skimming the waves with its wings, and

"The songless shoals of spawning fish"

that are

"nourished in deep waters"

and led, it may be, by Aphrodite.

There is the poet's relation to his kind, the sympathy with

"men and women, the pitied and bewailed,"

who after their little share of life with briefest fates

"Like smoke are lifted up and flit away;"

the interest and delight in the activities of man. how now one lights his lantern and sallies forth in the wintry night; how now another mixes his paints in the sunlight for a bright picture of trees and birds which is to adorn the temple; how now a little girl, down by the brook,

"Plays with a waterclock of gleaming bronze."

There is the poet's instinct, for the effective phrase, that suggests so much, because it tells so little; an austere simplicity that relates the author by achievement to that best period of Greek art to which he belonged by birth; and a roll of rhythm as impassioned and sonorous as was ever heard on Italian soil, though that soil was the birth-place of Lucretius....But I am the translator, not the critic, of the poet.

WILLIAM ELLERY LEONARD.

MADISON, WIS.

THE HEREDITY OF THE UPRIGHT POSITION AND SOME OF ITS DISADVANTAGES.

MAN may be considered the only one of the higher animals capable of adjusting the condition of his surroundings to his needs or taste. The method of attaining the desired end is prompted by physical discomfort or psychical appreciation. The brain itself feels nothing and is therefore considered a sort of second self—more or less removed from the physical man both in popular conception and psychological teaching. The anatomists and physiologists however regard the brain as one of the physical organs direct in its relation to the structure and function of the body community—a relation lost even if self-evident in the maze of the probable physical side of thought.

It is man's knowledge—the development of his brain—that determines the adaptation of his environment. The physical man, the long-suffering house the brain lives in, is merely a convenient mechanical accessory to the mental self, and should this physical element in man force itself upon his consciousness, the inconvenience of a body is evident. The separation of man into brain and body! Whence came it?

We have little information concerning our remote ancestor to whom we generously apply the term "the" missing link, except that he was once not as high a form of animal as he is now, and that he was very hairy and surprisingly like the ape. He was possibly a recurring muta-

tion or sport upon some simian limb—different from his brothers in that his brain was a little better developed. Just as men of to-day with exceptional brains distance their less gifted fellows, so this man—let us assume by his recurrence—developed a new type of animal bearing all the evolutionary evidences of his ancestry, possessed of a better thinking apparatus and because of it more able to survive and select among his kind those more fit. We can safely infer that the progressive evolution of man was due to his peculiarly advantageous relation of gray to white matter and that as the brain advanced the body followed at a respectful distance.

It is probable that this relatively gifted prehistoric being found it desirable to assume the permanent upright position as opposed to the semi-upright for the following reasons: In restricting locomotion to his hind legs and abandoning his arboreal habits, he freed the front legs and could use them entirely for prehensile purposes—organs well adapted to such variation in function and entailing little structural change. He was already endowed with sustained binocular vision as are all the primates, and had outgrown the nocturnal habits of the immediately preceding line of animals represented by the prosimian (half-apes of Madagascar).

The development of his front legs for prehensile purposes led to the acquirement of hand-dexterity, which is not hereditary but trained as every parent knows. Here his binocular vision troubled him first (and it troubles him more at the present time) because he began to apply the dexterity of his hands to that expression of brain development which tended to raise him higher and make him less dependent on his surroundings. He began to adapt his environment to himself in the fashioning of rude garments and in the manufacture of implements both warlike and domestic. He trained a convergence of his eyes in order

that he might meet this self-imposed condition and to translate them from purely distance organs to structures that could see equally well near by and far off (contact-distance organs). This acquirement of accomodation shows its recent advent negatively in that it is about the first thing lost in the degeneracy of old age—the far-sightedness of the person over forty-five years.

Growing intelligence led to the transmission of more and more complicated ideas to other individuals in speech, whether gesticulation, spoken, pictorial or written.

These then are the few things in which egotistic man excels the animals: primarily the character of his brain development; secondarily, the maintenance of the upright position, the acquirement of hand dexterity, development of the accommodative apparatus in the eyes and training their convergence (cross eye); and lastly, in intelligent articulate speech. It is a fact, generally speaking, that those things last acquired are first lost, and those things first acquired are last lost; illustrated positively in that the baby walks before it talks, or even more completely in a purely negative manner. The person depressed by an anesthetic such as chloroform or ether, or in the gradual onset of drunkenness loses his faculties in about the following order: first, self-restraint or any and all of the finer sides of human nature last acquired; speech next becomes more or less incoherent; balancing becomes difficult; speech is reduced to noises before the individual returns to all-fours; vision is next lost, and when gone hearing soon follows; complete unconsciousness.

That our mental development is far in advance of our physical is illustrated nicely if we but compare the average man of to-day with say the mound builder. Our intelligence as the last acquired attribute is undoubtedly very plastic and capable of much variation in development. That it is the active factor in our advance is shown by an

example such as this: Major C. E. Woodruff, U. S. A., found that the element of danger to the white man in the tropics was not the heat but the intense light. Enter knowledge of the conditions and specific intelligent adjustment of the environment to the white man who is recommended to wear white outer clothing, and dark—preferably black—underwear. Adaptation of the surroundings to a type of man who is not provided with sufficient pigment in the skin (melanin) to meet the conditions.

Thus intelligence daily exhibits those characteristics which have enabled us to survive in the struggle for existence. Just as our brain-development was the probable cause of our ascent so our brain-development may eventually cause our decline. Intelligent people select intelligent people—the brain-development is set at a premium—and ultimately the relation of the child's head to the birth-canal of the mother may be so disturbed that the life of the mother may be jeopardized in the fulfilment of nature's second law, if the child can be born in a viable condition. The physician is one of the greatest enemies to progressive evolution in the animal sense in that he is assisting in the selection (artificial) of those individuals who would be eliminated under normal (animal) conditions.

The last remark may appear to substantiate an erroneous and popular notion that the laws of "animal" evolution do not obtain for "man." The writer took exception to an article which was an open recommendation to mothers to bring their babies up on the bottle from the start and based on the premise that nature (save the term!) is doing away with the breast function. The breast is the last acquired sex organ; last acquired things are lost first in degenerative changes, and under normal conditions those babies that could not be nursed would die and the depleted stock be eliminated. Should we continue, as we must, to

select those individuals bred from a stock that cannot nurse its young, it is not unlikely that the genital function will be suppressed (sterility).

Our brain-development may therefore lead us to four possibilities: (1) a return to a more or less normal relation of mental to physical development (the alleged inferior class); (2) elimination of those individuals possessed of too large a head (over-development); (3) elimination (prolonged by unnatural selection) of those individuals bred of a stock that cannot nurse its young; and (4) race suicide of the so-called higher classes.

The maintenance of the upright position was mentioned first among the secondary factors that contributed to man's ascent. First, because it was essential to a freeing of the hands and to the application of growing ideas. Without it nothing would have been accomplished and it must therefore be considered the second most important human attribute. Our hands after all are not unlike those of our far-removed cousins the apes. The chief difference apart from technical muscle separations is found in the thumb. This digit is a relatively short member in the ape and is tied down rather firmly to the side of the palm. The amount of opposition is poorly developed and other than in its length it resembles that of a child closely. A baby does not pick up an object off the table between the thumb and first finger at first, for such coordination of muscle-action (opposition of the thumb) is acquired and not hereditary. Rather it reverts to the monkey fashion and gradually draws the object to the edge of the table that it may clench its fingers about it. Later the infant trains an opposition of the thumb and learns that it may touch the base of the little finger with ease—a feat impossible in the highest ape. The sense of "feeling" is much better developed in other animals, but the sense of "touch" (popular

meaning) is after all muscle control mainly of the thumb and index finger.

It has been stated that "man climbs his own ancestral tree" (Milnes Edwards) and that he carries on his person unmistakable evidences of his ancestry. Whatever the intrinsic or extrinsic factors may have been which prompted our remote forefather to assume and maintain the upright position, this much is true,—that despite the myriads of years he has spent in readjusting himself to the self-imposed and unnatural posture, it has been far from complete and will probably always remain imperfect. The upright position has many disadvantages—irreparable in the deficiency of adaptation—factors that even tend to eliminate the physical man—*prima facie* evidences of evolutionary development as opposed to divine creation.

Let us limit our attention to the three most important functions in animal life; respiration, or the obtaining of the necessary oxygen; digestion, or the obtaining of required water and food; and procreation, the perpetuation of the species. Let us remember that not only lack of adaptation to false position is of disadvantage but that the force of gravity is directed at right angles to what it would be were we on all-fours. Let us assume that it is the object of the writer to prove that not only is the adaptation to position mechanically faulty but that the individual is actually laboring under other evident disadvantages. Many conditions that carry people to the hospital daily must be omitted and no effort toward anything more than a few facts will be presented.

RESPIRATORY TRACT.

The vertebral column in the animal is placed about on the horizontal. The trunk is supported by four legs and the weight carried by the front legs is transmitted to more or less vertical ribs. Respiration in the animal, like

that in man, is of two types—costal and diaphragmatic. Costal respiration is accomplished by swinging the vertical ribs forward—a movement not affected by gravity and requiring but little effort—for inspiration, and relaxing the muscles for expiration. Diaphragmatic breathing results from contraction of the diaphragm and horizontal displacement of abdominal viscera toward the tail, with passive return on expiration.

The assumption of the upright position resulted in several things. The support of the front legs was lost and they in turn are carried on ribs now placed horizontally. In costal respiration not only must the ribs be lifted against gravity but some of the weight of the upper extremity elevated as well in inspiration while expiration is assisted; the traction of the abdominal muscles, now used for balancing, must also be overcome. In diaphragmatic respiration, the increased intra-abdominal pressure (flat abdomen characteristic of man) must be counteracted. Partly as a result of this we find a difference in the type of respiration in man. The breathing is costal in character in either sex when asleep (more or less animal-like); when awake however it is subcostal and diaphragmatic in the male, while in the female it remains about the same (costal). Why now should the type of respiration in two sexes suddenly change (and daily) when "they get up on their hind legs?" Let us consider some of these reasons before passing to more or less direct results of the assumed posture on the respiratory tract.

The male as a rule is the more active. His activities tend toward greater development of the abdominal muscles used in balancing and consequent interference with costal respiration. Not only is the relatively greater weight of his upper extremities transmitted to horizontal ribs, but the use of his arm, especially where strength is demanded, necessitates a fixation of the upper five or six ribs, and res-

piration is confined mostly to the diaphragm. The fact that this type is acquired shows itself in the return to normal when asleep.

The type of respiration in the female remains the same because she more nearly approaches the animal type in that she does not carry as great a weight on her upper ribs and that she does not need arm-strength with fixation of the upper ribs; more important, however, is the amount of abdominal room required for the gestation of offspring where abdominal breathing would be markedly interfered with; and the third and least important reason is due to the control of any abdominal expansion by the corset. Should any woman doubt this, let her lace a little tight to exaggerate the experiment, take a pail of water in each hand (fixation of the upper ribs) and walk say up two flights of stairs. She will find the greatest inconvenience is not in carrying the weight but in breathing.

There is a tendency due to change in position (gravity) to make inspiration more difficult and expiration unnaturally easy, and as a result we hold our chests poorly expanded. Well illustrated is the so-called good chest expansion say by an example (centimeters are used instead of inches, because they illustrate the point better and the chest-expansion given is abnormally large — exaggeration).

Given a man with chest normal, 90 cms.; expanded, 100 cms.; and contracted, 85 cms.: the relation of 10 cms. expansion to 5 cms. contraction when compared with normal. Physiologically speaking this individual holds his chest one third expanded. Given another man with similar maximum and minimum, 100 and 85 cms. respectively, but who holds his chest at 95 cms. The latter keeps his lungs relatively two-thirds expanded. The former type of chest is a poor chest and common; the latter is a good type and rare. The frequency of the former type is due

to the fact that the upright position is disadvantageous to proper lung-expansion, and for this reason children should be taught to "throw the chest out and the abdomen in"—an effort that ought to become a habit. Well what of it? What if we do not hold our chests well expanded?

We all know that we are breathing in germs all the time. Most of them are innocuous, some of them death-dealing (tubercle bacillus for example). The unexpanded areas of the lungs are weaker in that they are not exercising a normal function and here the tubercle bacillus has a better chance to lodge and multiply. For this reason tubercular nodules are found in the upper poorly expanded apices of the lungs so frequently that it is almost normal. Were it not for adaptability, more of us would be affected; as a matter of fact few of us escape infection which is walled off—no thanks to our mechanical defect in posture.

DIGESTIVE TRACT.

The digestive tract in the animal is attached to the back wall of the abdomen by a thin serous membrane known as the peritoneum. The membrane, however, is merely a lubricator, carrying between its layers vascular structures to and from the tract. The force of gravity tends to bring the viscera in apposition with the horizontal abdominal wall where they are supported. When the animal has eaten heartily, it rests, and lies down with its digestive tract indirectly on the ground.

The upright position hampers the digestive tract in many ways. In order that the individual breathe properly he must "throw his chest out and abdomen in" and crowd the already cramped tract against a curve in the vertebral column thrown to the front to compensate for the unnatural position. The peritoneum must now be used as a support, and about twenty feet of small intestine is hung from a vertical abdominal wall by this thin membrane,

attached for a distance of say even five inches. The result is that the small intestines crowd down into the pelvis and against the weakest part of the now vertical front abdominal wall. Apart from this tendency toward dislocation, they may even come through the abdominal wall in the form of a rupture or hernia. Eighty-five per cent. of these ruptures (conservative estimate) are due to the upright position (gravity) and to irreparable faulty adaptation of the viscera to withstand the traction. The same is true of other abdominal viscera.

The digestive tract as the one great tract under the direct control of our intelligence is naturally long suffering. We probably eat too much and our habits are such that we do not rest after meals as the animal does but try to keep an excess of blood in two parts of the body—for digestion and for muscular effort or brain work at the same time. The consequences are evident to anyone who has gone in swimming or has tried to be particularly brilliant after a hearty meal. In the former case it is probably headache; in the latter instance, sleepiness. This is one of the strongest pleas for the after-dinner cigar or cigarette—it requires no effort and keeps the smoker quiet. Jokes after a Thanksgiving dinner are not appreciated; either the company is too dull (lack of blood in the brain) or it hurts them to laugh. This hurting to laugh is due more to increased weight of the digestive tract than to distension as such individuals are surprisingly comfortable when lying on their "stomachs." Reversion to animal position.

REPRODUCTIVE SYSTEM.

Every fit animal arrives at the period of maturity that it may exercise the procreative function—a general zoological law with some modifications. When the male and female have completed their natural mission in life they die. In some cases the life of the male is sacrificed in the

act (bees); often the female lives only long enough to lay the eggs (moths); or the animals live beyond the procreative period for a certain length of time when degenerative stages set in and the animal is no longer fitted to cope with the environment.

The chief disadvantage of exercising the procreative function in man is mostly mechanical (lack of adaptation to the upright position) and therefore found in the female. Disadvantages also arise from a psychical source—exclusively human and un-animal—and due to intelligence. During pregnancy the mechanical accessory to the brain—the body—becomes seriously inconvenienced and evident. It interferes with what the possessor wishes to do, and hence the attempt is made on the part of *homo sapiens* to eliminate himself: (1) by prevention of conception; (2) by mechanical interference with pregnancy; (3) by restriction of the number of children; and (4) by refusing to accept the responsibility of having children. The last named reason is wholly worthy and a necessary accompaniment of false surroundings (domestication in the animal sense). The third point probably results from the desire of every parent that the children shall not only have the best chance but excel. The writer believes judgment should be reserved in such cases. Nature counteracts all of these strictly human characteristics very adequately in declaring such individuals unfit.

The disadvantages of the physical side are due to the fact that we are standing on our "hind legs." The abdominal room is cramped at best, and the vertically placed front abdominal wall gives poor support and does not distend well. So far the two important tracts of respiration and digestion have not seriously been incommoded. The increasing weight of the offspring, however, is of great disadvantage in the upright position. The pressure is directed against veins which themselves are working against

the "head" due to translation in function. The pressure symptoms against the veins and nerves, particularly those of the lower extremities, interferes with their proper nutrition and in extreme cases gives rise to the so-called varicose veins, etc. Placed under normal animal conditions the helplessness of the pregnant human female would be eliminating. Compare the condition of the pregnant woman with that of the female animal which may carry even a greater proportionate weight of progeny, and compare again their physical adaptation to their respective conditions. The facts (natural conditions—in error—if you like) arraign themselves entirely against man, and he is forced to exhibit great intelligence to make even a good showing.

When man and woman attain a certain age (more definite in the female—about 45 years) the genital function is suppressed;—an evidence of the down grade on the curve of life and a beginning, physiologically speaking, of senility. It is at this stage that the animal is eliminated. The human being has increased his span of life gradually by counteracting degenerative changes, but he has not increased the useful period. Rather the increase in life, prolongs the period of senility by skillful adjustment of the environment (false teeth, dieting and what not). This period equals roughly one-third of human existence and in the majority of cases is not very productive.

It is not the writer's purpose to present a calamity oration or to attempt the superhuman and offer any suggestions as to what may be done. Rather to give food for thought and to convince the more egotistic of our number that we are far from perfect. To say that we would be better off on all-fours would be absurd. We have adapted ourselves imperfectly, and while we labor under distinct disadvantages, our progressive advance refutes any idea that we are withal a degenerative stock. It hurts no one

to realize that he has an ancestry, that his Genesis has been Evolution, that he suffers inconveniences because his remote forefather assumed the upright,—rather he appreciates more nearly the ideal man, even if he be burdened with imperfections transmitted to him by a long line of forbears.

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AVESTA ESCHATOLOGY COMPARED WITH THE BOOKS OF DANIEL AND REVELATION.*

[CONCLUDED.]

RESURRECTION.

Aside from the actual occurrence of such ideas as the number seven when applied to the Archangels of the Avesta and to those mentioned in the Exilic Semitic documents above cited, together with the other similar matters noted, nothing has been considered more effective for the establishment of analogies between the Exilic Bible and the Avesta than the passage Daniel xii. 9: "Many of them that sleep in the dust of the earth shall awake, some to everlasting life, and some to shame and everlasting contempt."

The antecedent passage to it is in Isaiah xxvi. 19, and the strongest sequent is that of the well-known place in Rev. xx. 12. This recalls at once a dominant element in Zoroastrianism.

a. Resurrection in the Gātha.

In the Gāthas attention is rather turned to human immortality in the light of accountability, making them the earliest consistent documents of such a belief in a civilized literature, while corporeal resurrection is for the most part only implied throughout, as if it were regarded as a sec-

* For the most part delivered in university lectures.

ondary matter. See, however, the expression "forever in the Druj's home their bodies lie." Here my colleagues, however, have laudably suggested another cast of meaning—"forever they are citizens of the Druj's abode." But the Sanskrit *ast'i* which renders an *ast'ayah* (="bodies") probable, corresponds well with Avesta *astayo* (*ast'ayah*) ="bodies," and "bodies," i. e., "persons." "Bodies in the house" is, I think, a more probable rendering than "citizens," particularly as the Druj's abode is equivalent to "Hell." "Citizens" of itself is a "good" term in Avesta just as the word for "augmentation" of itself almost implies "holiness," in ancient Parsi conceptions. "Citizens of Hell" is not therefore of itself a natural Avestic expression; for without further explanation we should understand the word "citizen" to imply normal good character,* so that my rendering above cited remains the most rational, and affords us the idea of "bodies" in the future world as does the later but still genuine Avesta; moreover, the evil souls receive evil food, endure darkness, hear evil speech, all of which, unless wholly figurative, implies bodily organs; and last of all it is a law of exegesis that the most objective rendering should be first suggested.

The Frashakart in the Gātha, like the idea of the Ameshaspends, is so real, that it, like them,[1] has not yet secured a quasi-technical name there; so that we cannot pointedly bring it in; but this signal group of thoughts interpreted by the later Avesta implies a corporeal resurrection.

"May we be like those who bring on this world's perfection," alludes to the future millennial or ultimate beatific state, as to which see below.

* This is a distinction of the utmost critical importance. Many expressions in ancient books so notoriously convey the impression that the ideas involved in them were of themselves "favorable" and "affirmative" that we are almost at times constrained to restore an apparently improbable text in a sense adapted to this important characteristic.

[1] The terms *Amesha spenta* do not occur in the Gāthas, appearing first in the next earliest pieces.

b. Resurrection in the Later Avesta.

In the later Avesta we lose the dignity of the Gātha, but we gain more detail and color; see such passages as "we sacrifice to the Kingly Glory which shall cleave unto the victorious Saoshyant (the One about to benefit, or to 'save') when he shall make the world progress unto perfection."

Note again that this passage, although considered to be "late," has not yet reached that period when this last idea of "progress to perfection" was represented by an especial name, a technical "Fraskakart"; for it is again clothed in language which still possesses internal significance of a fully vital character; as much so as in the fresh-making" of Yasna XXX. See Yasht XIX for the further form and color, "where it, the world, shall be never dying, not decaying, never rotting, ever living, ever useful (profit-making), having power to fulfil all wishes [a characteristic expression, meaning that 'the world's inhabitants will then be dominant'], when the dead shall arise and immortal life[2] shall come, when the settlements shall all be deathless." See also fragment V of Westergaard: "Let Angra Mainyu, the Evil Spirit be hid beneath[3] the earth; —let the D(a)evas disappear;—let the dead arise, and let bodily life be sustained in these now lifeless bodies." Notice the absolute impossibility of merely "old age" as the meaning of "immortal" here.

[2] This passage has always been held by thorough scholars to follow the Gāthas by a few centuries, but a tendency has been lately manifested to place the later Avesta some centuries after Christ, and this while the Gāthas themselves are still firmly held to be at least somewhat older than the Achæmenian inscriptions. But this would be to place a vast interval of time, more than a thousand years, between the original Avesta and its sequents, which seems to me to be rather irrational. The later Zoroastrianism is however a different matter. That of course post-dated the later Avesta, which intervenes between it, the later Zoroastrianism, and the Gāthas.

[3] Notice that Hell was downward.

c. In the Later Zoroastrianism.

In the Bundahesh, chap. XXXI, we have as follows:[4] "On the nature of the resurrection it says in Revelations (referring formally, as we see, to once pre-existing documents as current lore....) that....in the millennium of Hushedarmāh (a supernaturally born posthumous son of Zarathushtra) the strength of appetite will diminish; they will first desist from meat and then from milk, then from water; and for ten years before Saoshyans they remain without food and do not die."

We notice at once the degeneration in the delineation from the terms of the genuine but later Avesta, how much more from that of the Gāthas. "After Saoshyans comes they prepare the rising of the dead; as it says that Zartūsht asked of Auharmazd thus: 'Whence does a bodily form come again; and how does the resurrection occur?' [Compare the expression 'with what body do they come?']—And Auharmazd answered thus: 'When through me the sky arose from the substance of the ruby [it was supposed to be stony *coela ruunt;* cp. Y. XXVIII], and yet supported without columns, [see Y. XLIV, *avapas tōish*] on the spiritual support of far-compassed light [was fire also thought of?],—when through me the earth arose which bore the material life, and there is no maintainer of the worldly creation but it,—when by me the sun, moon, and stars are conducted in the firmament of luminous bodies;—when by me corn was created, so that, scattered about in the earth, it grew again and returned with increase; ['thou sowest not that body that shall be but naked grain'],—when by me color of various kinds was created in plants [flowers];—when by me fire was created in plants [vegetable caloric] without combustion;—when by me a son was created and fashioned in the womb of a

[4] See *S. B. E.*, Vol. V, pp. 120 ff.

mother and the structure severally of the skin, nails, blood, feet, eyes, and ears and other things was produced.... each one of these, when created by me, was herein more difficult than causing the *resurrection*, for it is an assistance to me in the resurrection that they exist, [i. e., they exist actually on in their dissolution, resurrection being merely their re-construction]; but when they were formed it was not the forming of the future out of the past, [as the resurrection will be], and so it, the resurrection, will be less formidable as an undertaking than the original creation.

"When that which did not at all previously exist was then produced, at the creation (out of nothing) why is it not possible to produce again, [re-construct] that which was come in an existing body; for at that time, the time of the resurrection, one will demand the bone from the spirit of the earth, i. e., from the dust [recall Ezekiel 'bone to his bone,' also Daniel's 'rising from the dust] the blood from the water, the hair from the plants, and the life from the fire, since they were delivered to them in the original creation [at death]. First the bones of Gayomard [the Iranian Adam] are raised up ['the dead in Christ shall first arise'], then those of Mashyoi and Mashyoi, [the first human pair], then those of the rest of mankind. In the fifty-seven years of Sōshyans, they prepare all the dead, and all men arise [stand up], whoever is righteous and whoever is wicked, every human creature ['I saw the dead, small and great, stand before God'];—they rouse them up from the spot where its life departs. Afterward when all material living beings assume again their bodies and forms, then they assign them each to a single class. Of the light accompanying the sun one-half shall be for Gayomard ['there is one glory of the sun'] of the stars ['Another glory of the stars'—'one star differs from another star in glory']; and one-half of the light will give enlightenment

among the rest of men, so that the soul and body will know that is my father and this is my mother,.....etc."

The Bundahesh is a very prominent work among the later Zoroastrian documents, and, as just implied, it post-dates Christianity by some hundreds of years. But the expressions in Plutarch already alluded to, seem to indicate the prevalence of an almost exactly corresponding tone of thought as that of this later Zoroastrianism even as early as 100 to 300 B. C., and this strong eschatology is homogeneous in an unbroken chain with that of predecessors to the time of the Gāthas, whereas the Jewish doctrine of the later days was an innovation of the time of the Exile intended to console the captives who had lost their homes and their property; see above. The same remark applies to all other post-Christian Zoroastrian doctrines.

THE JUDGMENT IN DANIEL AND IN THE EXILIC AND POST-EXILIC THEOLOGY IN GENERAL; SUBJECTIVE RECOMPENSE.

The next most important particular which demands attention would be the Day of Judgment, or rather "a day of judgment"; for, as this feature occurs in Daniel, it was primarily judgment upon the Beast (see Daniel vii. 9-14) who had persecuted the saints; see it supplemented by Revelations where the same original motive of vengeance is present, but where the act itself is represented as universal upon an assembled and risen mankind. So far as imagery is concerned, the Zoroastrian pales before its sequent, though Zoroastrianism shows a superior refinement and depth in one supreme particular; for not only does it concern itself more immediately and chiefly with the moral accountability and the future state than other systems of its date, but it offers the first well-certified occurrence of the great and crucial doctrine of Subjective

Recompense, the idea that "virtue is its own reward, and vice its own punishment"; see below. Its awards were not exclusively of this character, and it might possibly be doubted whether the idea focussed itself in the thought that the fact of being "a sinner" was itself actually the doom and execution, or whether it first meant to suggest that the particular sins were in a way figuratively the personified executioners; but it is obvious that the one idea was not at all so very far distant from the other, and that the first was certainly foreshadowed in the last and that indeed it inevitably led on the mind at the next step to it. Subjective recompense was also not of course the whole of the Zoroastrian Heaven and Hell; but it was the soul of them,—and this might be said to be almost the crowning glory of this entire scheme, curious as such a statement may at first sight of it appear to some of us to be.

a. The Judgment in the Gātha.

In Y. XLIII, 4 we have: "For so I conceived of three as August [with others 'as Holy'], O Ahura Mazda, when I beheld Thee as supreme in the generation of life; when as rewarding deeds and words Thou didst establish evil for the evil, blest rewardings[1] for the good[2] by Thy just virtue[3] in the creation's final change.[4] (6) In which (last) changing Thou shalt come and with Thine August Spirit [others, 'and with Thy Holy Spirit'] and Thy Sovereign Power, O Ahura Mazda, by deeds of whom the settlements are furthered through the Righteous Order (of Thy Law);

[1] Hardly "riches" here.

[2] Notice the laws of judgment established from the foundations of the world, spoken of as if seen by reflective vision directed upon the original creation. Or are these preterits to be read in the sense of futures expressed in the sense of the improper conjunctive?

[3] I prefer the original meaning in this ancient passage—as expressing the "justice" rather than the "wisdom" of God, for in the next verse "the omniscience" is given.

[4] "Revolution" is hardly the meaning here; "the turning" was an expression for "the end,"; see other passages.

and (saving) regulations likewise unto these shall Aramaiti offer [Angel of the ready will],—yea laws of Thine understanding which no man may deceive."[5] In another key of rhythm in the Gātha Ahunavaiti we have at Y. XXX, 4:

"Then those Spirits created as first they two come together life and our death decreeing, and how the world at the last shall be (ordered). For the Evil (as Hell) the worst life, but for the Holy the Best Mental (state)...."

(8): "Then when Vengeance comes, Vengeance just upon the wretches...." (10) "There on the Host of the Druj the blow of destruction descendeth, but swiftest in the abode of the good Mind gather the righteous; with Mazda and Asha they dwell, advancing in their good fame."

Y. XXX, 11: "When long is the wound of the wicked and blessings the lot of the saint."

Y. XXXI, 17: "And what debts are paid in justice for the offering of the Holy.—What is the wicked's debt, and their portion what in the Judgment?"

Y. XXXI, 21: "He who deceives the saint for him shall at last be destruction—long life in the darkness his lot, vile[6] his food, with revilings loathsome;—These be your world, O ye foul. By your deeds your own soul will bring it."

XLVI, 7: "Karps, yea, and Kavis are with foul kings joining, deeds which are evil with man's better life to slay;—cursed by their souls and selves, their being's nature, when from the Judgment's Bridge (they fall, the final pathway):—Ever in Demon's home—their bodies[7] lie."

[5] His judgment is infallible.

[6] Represented in the later Zoroastrianism.

[7] More literally: "The K and K will join and with evil Kings, with evil vows and deeds to slay the human life, whom their own souls and their own conscience will shrink at when they come where the Judgment Bridge (extends), for ever to all distance—their bodies lie in the Druj's Abode."

XLIX, 11: "Then evil rulers, evil-doers, evil speakers, those believing ill, and false men evil-minded, with evil food[8] the souls to meet are coming. In Druj's home at last their forms[9] (abide)" [or "in Falsehood's home at last the citizens(?) (they are)"].

Y. LI: "He who than good better giveth, He who renders rewards for religion—is Ahura Mazda in His sovereign power; but He gives him worse than the evil—who does not impart offerings to Him—in the last end of the world."

Y. LI: "What satisfaction thou shalt give through Thy red flame, O Mazda, give as a sign[10] through the melted bronze [through the lake of fire] for both the worlds, [see verse 6] as an indication [or "implement"] for the wounding of the faithless and the prospering of the saint."

These may suffice as expressions from the old Avesta, the Gāthas.

b. Judgment in the Later Avesta.

In the later Avesta at Vendidad XIX, we have: "O Maker of the material worlds, Thou Holy One, where are the awards given? Where does the rewarding take place? Where is the awarding fulfilled? Whither do men come for the reward which in their life in the material world they have made good for the soul?"

Some of the more dramatic features of the supernatural judicial scene which appear in our Holy Scriptures are absent from the Avesta, or have perished from it; —yet this is again made up by the extraordinary subjectivity, which is present everywhere; for in answer to the above the soul seems to judge itself, justifying or con-

[8] This is a fragment of the original of Yasht XXII.

[9] Or "as citizens(?) they are"; see above.

[10] So I now think to be possible in view of the Bundahish; see above.

demning itself in the same manner as we have just seen in the Gāthas, though this occurs on the sadder side of the matter, but even pleasing dramatic features intervene in this case in the later books Vendidād and Yasht XXII. For it, the soul (V. xix, 115) is met on the Chinvat Bridge, or at its entrance, by its own counterpart and is questioned by an image representing its conscience. A welcome which recalls the most touching passage in St. Matthew, (xxv. 36-37), meets it. It then proceeds upon its path toward the summit of Hara Berezaiti, (High Mountain), the name still surviving in Elburz in the territory at the southwest corner of the Caspian till a late period.

There the soul comes before the golden throne of Vohumanah, who strangely enough represents the "Holy Man" like the "Son of man" in the Gospels; see above;—and he, Vohumanah, is also indeed the Good Mind of God and of His saints personified, recalling our doctrine of the divinity of Christ, which represents Christ as being both God and man. He rises from his seat and greets the approaching saved man. One of the faithful beside Vohumanah, full of concern, asks him: "When didst thou come from that transitory world to this intransitory one? how long was they salvation?...."

The passage is of course a mass of fragments and we are left without his answer, though Ahura courteously intervenes with the remonstrance: "Ask him not of that cruel way...." The soul then passes on "contented," that is to say, beatified; "to the golden throne of Ahura Mazda —and to the golden thrones of the bountiful immortals, even to Garodmana, Heaven, the abode of sublimity or song, to the immortals and Ahura's home."

c. Judgment in the Later Zoroastrianism.

These delineations of Avesta are continued on the Bundahesh (say 500-700 A. D.) and in other works of the

later Zoroastrianism, with little or no diminution in the subjectivity of the described occurrences. In the Bundahesh on p. 122, we have: "Then is the assembly of Sadvastar where all mankind will stand at this time."

In that assembly every one sees his own good deeds and his own evil deeds, and a wicked man becomes conspicuous as a white sheep (sic!) among the black. Afterwards they set the righteous man apart from the wicked, and then the righteous is for Heaven,and they cast the wicked back to Hell; ("take him and cast him away in outer darkness"—darkness being a feature of the Zoroastrian Hell).

As it says on that day, when the righteous man is parted from the wicked, the tears of every one thereupon run down into his legs;—they weep, the righteous for the wicked, and the wicked for himself, etc.

In Daniel we have the fiery stream and the melted metal, and so we have the Lake of Fire in Revelations xx. 10, 14. In the Gāthas (Y. LI) we have "the melted bronze"[11] with no lake or river mentioned, but in the Bundahesh it is a river (p. 125), and it is there, as is usual with such matters in Zoroastrianism, rationally explained; for it results "from the melting of the mountains."

A Recurrence, for Illustration.

In leaving this department of the subject it will not be much amiss if I go back for a moment to the point above (see pp. 37 and 38), and call more fully to notice one most touching "element" in the analogies; see Yt. XXII, 7ff. and Vd. XIX, 30-32. We remember where our blessed Lord, not unlike Vohumanah, upon His throne, addresses His redeemed in judgment, saying: "Come ye blessed of my Father. . . . (Matt. xxv. 35) inherit the kingdom prepared

[11] So I now understand the passage, having formerly thought it could read literally, "as hammered bronze," referring to a sword blade.

for you from the foundation of the world....for....I was a stranger and ye took me in," etc.; but the very same good deed is mentioned to the saved soul in the Avesta, and in the matter of essential thought in a manner still superior to that depicted in St. Matthew,—for here in Avesta it is the believer's conscience which addresses him. So in St. Matthew, as we have it further on, the bewildered soul inquires with pleased if startled wonder—"when saw I thee....a stranger....etc." Curiously enough we have again here the very same idea in what has been well called the most exquisite passage of the Avesta and already just above alluded to.

On its way to the Chinvat the soul first meets a fragrant zephyr loaded with aromas of a better land; and it asks: "What is this fragrance which is the most rich which my nostrils have ever grasped?" Here is beyond all doubt the element of gratified curiosity....as in Matt. xxv. But this pleased wonder is again and more incisively expressed in the next scene immediately following, where the image is a holy maid who appears in the bloom of her beauty. The Soul asks as before: "Who art thou, O Maiden, who art the most beautiful whom my eyes have seen?"

And she who is his conscience answers: "I am verily, O youth, thy conscience, thy good thoughts and words and deeds, thy very own;" but, curiously enough, like the person in the Gospel he is again not yet at once convinced, but asks: "Who hath desired Thee hither with his love, [that is, invited thee,] coming with thy majesty, thy goodness, and thy beauty, triumphant and an enemy of grief?" And she answers: "It is thou, thou hast loved me—and desired[12] me hither, O youth, even thy good thoughts and words and deeds. For when thou sawest idol-worship thou didst desist....chanting the Gāthas and sacrificing to the good waters and to Ahura Mazda's fire, *contenting* [*that is to*

[12] "Invited me."

say, 'showing hospitality to'] the righteous man [i. e., thy brother saint] who came to thee from near and from afar."

Here we have hospitality beyond a doubt fully and emphatically expressed in the words "coming from near and from afar";—and so in Matt. xxv, we have as cited above, "For I was a stranger and ye took me in".... In the Gospel, however, it is not in the very forefront, while in Avesta it is the chief moral good deed mentioned: "Coming from near and from afar" might indeed refer to the pilgrims for high-festival occasions doubtless referred to in Yasna XXX, 1 and XLV, 1.

In either case, in both Gospel and Avesta, the soul is pleasingly bewildered, needing explanation as before: "When saw I thee a stranger?" in the Gospel; and in Avesta: "What is this fragrance?" and then, "What maiden art thou?"[13] and then here once again as if expostulating, "Who hath desired thee hither?" or, as I should now render: "Who hath invited thee hither?"

"It is thus," she continues, [through thy good thoughts and words, and deeds, and by contenting the saint who came to thee from afar] "that thou hast made me who am lovely, still more lovely; I am beautiful and beatified; and thou hast made me still more beautiful and beatified; I am seated upon a higher seat, and thou hast made me still more exalted through thy good thoughts, and words, and deeds."—Totally aside from all possible and impossible literary connection, we certainly see in each case the same hesitating doubt with an affecting humility, and the same delighted satisfaction; and most singular of all from one of the same good deeds. It is from this on that the soul goes toward the golden thrones of Vohumanah, Ahura and the rest, as we saw above.

[13] So before, "What wind is this?"

ZOROASTRIANISM IN ITS DISTINCTIVE CHARACTERISTICS.

The More Precise Sense in which the Term is Applied Above.

It may seem to some of my readers that this conclusion of my short treatise is hardly the place in which to clinch an important distinction as regards the chief one of all the subjects brought into consideration here. And this final and all-inclusive point or disc, is indeed the entire question of the definite aspect in which we have intended to view Zoroastrianism throughout, and this is especially contrasted with its two sister, or rather with its two closely related, systems, not exclusively so of course, but perhaps fundamentally so—most certainly so, to a very striking manner and degree.

But I have on the contrary the impression that, after having done all that lay within my power to do to awaken interest and to show how the intellectual forces which I proposed to marshal might be thought to tell upon the decision, it might then offer a sort of final incisive effect if I gather up the force of what has been said, and more closely define this one of the principal factors brought into operation. What then, in a distinctive or exclusive definition of it, is this particular Zoroastrianism, the partial effects of which I have endeavored somewhat closely to trace in my few pages above? And of course I mean by the inquiry to define its two sister systems which have been also necessarily brought to some degree into our view; for there exists, as might be expected, the most decided difference between the three, though "these variations do not touch" the primal characteristics of all.

The Avesta and the Veda.

As to the Indian Veda, which is certainly the nearest relative of the Avesta on the southern or south-eastern

side, I need hardly say that we have here no serious cause to linger further, as I have dwelt upon it elsewhere in fuller terms. The common elements of both Veda and Avesta involved in such a review of them as this, are familiar; and they are also clear and definable;—but they were loosely scattered within the vast labyrinth of early lore which resembles rather an immense and florid forest, where the separated materials of both Avesta and Veda lay at hand, and from which both emerged, its home being far away from all contact with the southern land and up toward the north and north-west of Iran; while of the two the Avesta and Rig Veda, the Veda, let us concede it, far more closely resembles those original growths, (though so much more distant from the common original home) for the simple reason that there is more of it. A lore which is comparatively sparse, from that very fact cannot reproduce so many of the early features of its mother lore, as a sister branch can which is more voluminous. Veda, therefore, as a matter of course, shows more of the common original than Avesta. The Ameshaspends, chief concepts of Avesta, are there in the Veda as I have so fully shown in *Zarathushtra and the Greeks*, but they were by no means present as a quintessence of selected and especially venerated significant ideas. They are there also totally unconscious of their kinship either with each other or with the selected six of the Avesta; in fact they are ordinary abstract thoughts personified at times indeed, but not distinctly grouped like those in Avesta, nor distinguished and exalted as they are in the Median lore, while one of them, and that one from the Iranian side, one of the most important, is merely the name of a late Vedic seer.

Outside of these few scattered concepts, noble and interesting as they must ever be, the differences as to the tone and substance are marked between the Avesta and the Rik. The highest gods of Veda seem to struggle in a

throng to attain position above their colleagues; but this desired eminence is hardly the serious and solemn superiority occupied by the Iranian Ahura as he appears in the Avesta; nor does any one of them really arrive at such position as He seeks,—at least none of them reaches it to hold it;—southern imagination was too fervid, restless and creative. Southern life with its milder climates and swarming populations offered too wide an opportunity for both impassioned action, active conjecture, and vehement expression. Each great Deity has to defend his position against his on-coming rivals, one or more.

Zoroastrianism, that is to say, in its earlier form, that of the Gāthas, is, on the contrary, almost our modern system, startling indeed beyond most other things, even when regarded solely as a literary curiosity, with its supreme and refined good Deity and with its excluded Devil—which last idea was indeed one of the best of great suggestions ever made to rid our God of all complicity with crime.

The vile thing, by this doctrine of an "independent Satan," is forever shut out from Him. Nowhere does the Veda show a trace of this; at least not definitely, while the Attributes are almost scattered as if lost amidst an interminable overgrowth;—so much for that relation with the Veda, so vitally essential as in its elements it is.

The Avesta and the Inscriptions.

But what of the Daric Inscriptions and their system, aside from what has been already said or implied above, where, as we see, the relation, so far as it at first presents itself, looks like identity out and out? And here I must pause to make a remark which is almost a stern reproach to science to be obliged to utter. It is that this question has never been put popularly into print and pressed home before, at least not in any effective and incisive way, though

of course it must have been long since often loosely stated in scattered remarks and in many an essay.

As may be seen everywhere above, and in the larger work, the Daric Inscriptions are our great and only positive bridge of literary and historical connection between Israel and the Avesta; for they objectively form almost a constituent part of the Bible on the one side, and of the Avesta on the other; and perhaps of the two they stand closer to the early pre-Exilic Bible, curious as such a statement may at first sight appear to be. Surely no rational teacher of the Holy Scriptures can dwell on these striking Persian edicts in the Exilic Scriptures so vitally crucial as they are to all religious history, without at the same time eagerly scanning and deeply searching the Inscriptions of the very same imperial authorities on Behistān, Persepolis, etc. They possess, indeed, these last, and as of course, in common with the Avesta, that supreme feature, the presence of a God as the Creator of heaven and earth, so termed with a predominant iteration, and therefore they are conspicuously marked above all other documents of their kind ancient or modern. He, Auramazda, is upon those Inscriptions a Supreme Good Being whose memorable name was identical in very form with the Supreme God of the Avesta; and this gives us what most of all we need when we compare the terms of the two lores, the Daric and the Iranian. Taken together with the devotional fervor of Darius expressed, as none such religious aspirations have ever been, in his ever repeated appeals and ascriptions of thankful adoration, these particulars constitute one of the most effective conjunctions of intellectual circumstances of their kind and nature ever recorded or pointed out;—but it is also of course to the last degree necessary to show the limits of these signal advantages in the comparison;—and here we have to lay down a principle which is strictly critical and unsparing. It is this:

while it is in the first place certainly true beyond all reasonable question that there existed both a knowledge of the Avesta as a series of Medic documents, and also of its general main features on the part of the persons who dictated the texts from which the stone-cutters chiseled the Inscriptions of Behistān, etc., we are, nevertheless, forced to study our sculptured texts in those Inscriptions themselves and in them chiefly, if not in them alone, in order to find out what the creed of their composer was; for unless we positively assume that the now surviving Avesta furnishes the immediate background to the ideas expressed in the Inscriptions, then aside from those Inscriptions themselves, meagre as they must of necessity have been, we possess no such record of the detailed opinions of those authors, Darius and his successors, at all. While, indeed, taking into consideration the necessarily limited extent of the Inscriptions as literary matter, they might be regarded in some aspects of them as being almost the most prominent signal documents of all Monotheism, Creationism and of passionate personal devotion at their date, yet, for all that, they are by no means at all so near the Israelitish creed in the point of their doctrines as the Avesta is; and we cannot leave our subject until we make this clear.

The Dualism.

Strange as it may seem, we cannot even affirm from these majestic memorials alone (i. e., from the Texts of Behistān, etc.), that the priests of Darius actually held even to the more closely defined dualism of the Avesta, though they unquestionably held to the chief female demon who appears in it, and I believe that she or he, for the demon might be male(?) in the Inscriptions, has in the Daric creed, as in Avesta, a *Master*, for such systems are generally *pyramidal*; and that this Master corresponded to the Angra

Mainyu of Avesta seems to be probable in the extreme; and if this was the case, then it was practically certain that he was one of the Two Original spirits; as he is so definitely stated to be in the North Persian writings. He may indeed not have been called by the full title "Angra Mainyu" in the lore of the Inscriptions, but by some modification of it. Or, again, he may have lost in the Achæmenian lore that independence of Auramazda which is of such vital moment in Avesta, just as under the form of Satan he lost it later in the Gospels, where he is completely (?) under the power of the Almighty, and this while he may have retained the name in full or modified.

Each of these possibilities, and any others that can be reasonably presented, must be taken into consideration by us, for such a question as this of the Dualism is, even when regarded as a side-issue, of the utmost interest as well as of the gravest importance as an intellectual religious circumstance; and in our serious endeavors to exploit the entire matter, we should here proceed with the utmost care and circumspection, with regard to it; for we should regard it as a positive certainty that there existed a mass of religious lore in Persia proper which has now been lost to us;—all surviving allusions to Mazda-worship in Greek and Latin authors seeming to refer to the Medic or Zoroastrian form of it.

The Ameshaspends.

Nor can we say with certainty that those composers of the Inscriptions accepted the Ameshaspends; see above, though it is practically certain that they heard their names re-echoed on every side;[1] nor does the word "Deva" occur upon the Inscriptions; so that my readers must understand that, in bringing in the above Mazda-worship, I refer distinctly to the Avesta for my main points as to the detail of

[1] See my *Zarathushtra, the Achæmenids, and Israel,* at the places as per index.

the Persian and Exilic eschatology, and not at all immediately to the Inscriptions in my main arguments, for it is in the Avesta, and in that alone, with its implied predecessors, that we have the acme of analogy with the Exilic Judaism. Nothing of its kind approaches it in this respect in the history of any religion with which I am acquainted, unless in cases where the one religion has been distinctly a descendant of the other; that is to say, nothing that is prominent and well assured. Avesta and the Exilic Bible should be to all conscientious searchers the question of the hour. So much for this.

What is Exilic?

But another matter indeed of an analogous character presses closely upon us with the implied demand to make it finally plain in the full scope of all our inferences.

We have been talking at every juncture of what is Exilic, pre-Exilic, and post-Exilic. But what do we really mean by it all? What is then really "Exilic" in a closer definition? The distinction is of course the one most vital of its kind of all that one can possibly make with regard to the Bible; and I have indeed necessarily foreshadowed everywhere what I am now about more distinctly and more fully to repeat, as it will be nearly essential for me to clinch what I have already said above by putting it in the clearest light and emphasis; for, like the other distinctions just made, it is seldom so pointedly presented as it ought to be in its full argumentative force.

Exilic and Pre-Exilic.

The matter in its closer point is this: We everywhere speak of the "Exilic Books"; but it is an obvious and pressing fact that much Exilic matter is present in many places in our at present so-called pre-Exilic texts; we might indeed be imperatively forced to doubt the uninfluenced existence

of any pre-Exilic texts at all, for how could that primeval lore have been preserved intact; since all knowledge of important parts of it was even entirely lost in such a period as the reign of Josiah.[2] And in a discussion like this, Exilic matter, if it exists even at all in the Books which we have hitherto called pre-Exilic, becomes, if recognized, equally with the peculiar doctrinal elements of the later books, an almost supremely dominant factor.

What then are the particulars which thus control to a wide extent the situation here?

Perils of the Manuscripts.

It would be like trifling with it for us to ask whether any persons of credit anywhere suppose that the Hebrew Bible has been miraculously preserved, or preserved otherwise than in the usual manner, according to the regular laws of nature. We may therefore take it at once for granted that all serious readers here believe that the texts of the Old Testament and New Testament have been handed down to us in manuscripts—like all other ancient documents of their kind,—and it is indeed a circumstance marvelous enough that they, or any other ancient document at all, have been handed down to us in any form; for the continuous life of ancient books before the art of printing is indeed as strange a phenomenon as the re-appearance of plants or animals in separated continents divided by water from the rest of the world. So, even of our Holy Scriptures, one would suppose that a single breath of war or political agitation would literally shake what is preserved in brittle manuscripts almost to irrecoverable fragments; and undoubtedly every convulsion, such as a campaign or an exilic deportation, has diminished the volume of these precious objects which have however lived on in their mysterious pertinacity. Schools of copyists existed

[2] 2 Kings xxii. 8. See the impression produced by the finding of the Book of the Law in the Temple even in that enlightened reign.

everywhere, of course, as well as individual skilled penmen. The scribes were obviously closely occupied in every center of religious learning as an essential element, and some of them in every detached community must have been charged with the especial care of the sacred rolls. And if this were the case while the Temple still stood, how much more must it have been the case in the keen religious revivals of the Exile? Then, as we have already seen, the avalanche of sorrows which first stupified, then infuriated, and at last reformed the holy race, made them search all the more solemnly their religious scriptures.

The to them, doubtless, most impressive pageants of their ritual had exercised unquestionably much restraining influence of a favorable character upon their minds as well as stimulated to some degree the active elements in their faith, and in fact it had been all-important in consolidating and preserving their intense unity as a people; —but temporal and corporeal considerations held their sway, as was most natural, in the incessant struggle and friction of their doubtless busy national and civic life in its periods of prosperity,—with all its fervent passion and its vivid color:—and this may be readily seen in the marvelous literary productions of the Exilic period. But the war of the Exile came,—and their existence as a nation was terminated or suspended. At first their experiences were bitter indeed, with the effect that their beautiful lyrics were the more often heard stirring the calm evening air in the rural suburbs of Babylon and in its surrounding provinces. The songs of Zion become then their consolation,—and since the sacred scenes of the Temple no longer survived to impart support to them, they began all the more eagerly to read and search their to them inspired scriptures;—yes, and to write further such compositions for themselves so that to those bards of the "sad" Captivity we owe most of the sublimer passages of

all the Semitic Revelation. Then surely they redoubled every effort to preserve and multiply the surviving documents of their Holy Law, written doubtless upon skins, which would bear the wear and tear of constant use better than the later materials, if indeed any other materials were ever really known to them.

Recopying of course took place, as it had never been so pushed on before; and it was done by men who lived near Babylon among the Persian garrisons as well as immediately within the "Cities of the Medes." Do we suppose that those tribes so forcibly settled in these "Cities," which must have been to some degree of it important centers, were of all conceivable Jewish communities the only ones without their Rabbis, their ordinary priests, their scribes and their Exile-archs? Here then was Judaism in the heart of Media which was even more Zoroastrian than Persia proper or than Persian Babylonia. Was not Ragha itself a chief one of those very "Cities of the Medes" to which allusion is twice made categorically in Kings;—Ragha which was a very hot-bed of Zoroastrianism? Surely Ragha, as almost the center of the tale of Tobit, has high claims to have been at least one of those places where the tribes were originally placed. Among the literary people of those tribes was many a one who had at least some admission to the circles of the great satraps, while as to those who had settled near Babylon, the kings themselves lived hard by at the summer palace city, Shushan, amidst the breezy hills of Elam, and both military and royal processions must have often occupied the roads. These imperial people, as we see from Ezra and his successors, knew much of the "Great God" of their new subjects; and that the Jewish leaders knew something of their faith, in reciprocating interest, it would be ridiculous to doubt; information on the one side here of course presupposes information on the other. *Avidity* is none too strong an expression to

describe the curiosity with which the gifted Semites must have questioned every Persian priest among their other new found fellow citizens, though in the case of the Babylonians the first ferocities of resentment must be allowed time to have worn away.

"What was then, more precisely, this religion of their great deliverer with its God so like their own Yahveh? And what were these angelic beings whose names were echoed everywhere among their new-found friends?"—for they were later the very names of the months and days among these North Medic officers, and they may well have been so then;[3]—and beside this with little doubt the beings whom they designated were even worshiped constantly at various divisions of the day. If then they could really understand that these noble words meant in their first application more, far more, than the titles of mere angels,—that they were actually the descriptive appellations of God's attributes; see above, and only then later personified as His first creatures,—how striking this must have appeared to them. And—what was this deep doctrine "as to thought, as to word, and as to deed"? How melodious too were those Gāthic chants in meters sister to the Veda which they now for the first time heard;—and how strange this doctrine of a resurrection,—of an advanced Heaven and Hell,—of millennial hopes, etc. Surely it is impossible that the Jewish schools of Babylon, not to speak again of those in the "Cities of the Medes," should not have known something about the faith of their Persian king, whose troops and courtiers, and beyond all question whose priests also, swarmed on every side with the usual staffs of assisting acolytes. Ignorance here seems simply inconceivable. They must have been little indeed like their successors, the well-known Jewish seers of keenest wit in Babylon, if they knew nothing of all this. Unlike indeed the

[3] See above.

men who founded the impressive schools at that great center, and who wrote our Exilic Bible for us, with our finest Talmud;—little of their kind indeed were they, if they did not find out all that Cyrus's priests could tell them, while the great King was doubtless himself seen often in his first Capitol both in ordinary imperial residence and in the ever-intervening crises of his reign. Remember how closely even an Alexander some centuries later on could question the Persian Destoors as to their lore with its impressive creed—while at later than the latter's date Jewish stories were half pure Persian in Medish scenes; see above.

Every Exile prophet, whose works have survived to us, shows that he breathed a new-found atmosphere; though he may have learned the Persian tenets by hearsay only and at second or indeed only at third hand, just as they must have later heard of the great inscriptions when they were newly cut and of many a predecessor of them now long since vanished, for that their replicas were everywhere is clear from Behistān. Those on that rock could not be at all reached by the passing wayfarers who might wish to read. Copies therefore of their substance, if not of their letter, must have been provided, and they must have been amply in evidence in every higher school.

The contrary to this is excluded absolutely from all sane consideration; see also the alleged messages from Cyrus on his side as also those from Darius, Xerxes, and Artaxerxes; and see their edicts in our Bibles with the throngs of ordinary Persian words and names like Mithradates, among those of the Jews. These things do not *prove* intercourse; they are "intercourse" itself. And as the prophets, so the priests, and the priestly scribes; the devoted men toiled doubly for many a weary day copying and recopying the holy texts. That they did not restore, interpolate and emend them everywhere is inconceivable,

if for no other reason, then because they were often for the most part quite half the time half-legible; and duty itself would call on them to bring the dim tracings back; whole folios and even masses of folios would be also lost, gone doubtless forever. Emendations were therefore made everywhere at frequent intervals; see above; could this have been avoided? And this took place, as we must clearly see, all the more with regard to the oldest and most sacred parts of Holy Writ. Do we suppose that the skins on which Genesis was painted were really any stronger than those inscribed with the first Isaiah, or that the pigments used as ink were less capable of effecting corrosions in the course of time? Often indeed would the oldest scripture stand recopied in the newest handwriting and upon the freshest scroll. Their new-found ardor, born of their adversities and their new associations, had created the searching diatribes of Ezekiel and of the rest,—and it is inconceivable that the re-writers did not add stirring passages even in the oldest documents to their studies in their endeavor to restore and point the meaning here and there. Little indeed of the Holy Scriptures of those early dates has been left at all to us, comparatively speaking, precious beyond measure as that little is,[4] and everywhere throughout the documents which were preserved fresh and live thoughts have been implanted as the needs arose. And from this let us gather our ideas of the "Exilic" elements in the former still embedded in the Semitic books throughout the very oldest documents, though of course these very emendations have themselves shared somewhat the fate of their primeval predecessors. Time and accident, travel, exile, war and sacrilege have of course changed

[4] It would be indeed almost a miracle, if truth can assure us that one tenth of our earliest Bible has actually survived, holy and sacrosanct as the fragment so truly is,—emendation, interpolation, excision went on everywhere *pari passu* with defacement, corrosion, theft, burning, vandalism, and every loss. Exilic matter crops out everywhere throughout.

text after text, and this beyond all question even in the oldest books.

Yet what is original is not so hard to recognize; simply because the Exilic interpolations are so clear. I will not prolong this point;—this conclusion is but intended to be a short remark. Everywhere throughout the oldest books of the pre-Exilic Bibles, the re-writers inserted their keener thoughts: so that "pre-Exilic" is a very dubious term. We must search the very texts of the Hexateuch for it if we would do our work, for Exilic matter must be everywhere.

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CRITICISMS AND DISCUSSIONS.

PHILOLOGISTS' VIEWS ON ARTIFICIAL LANGUAGES.

We have given a good deal of attention to the desire to create an international auxiliary language which is at present in prominence mainly on account of the enthusiastic support which this idea receives from Prof. Louis Couturat of Paris, who has a powerful ally in the famous Prof. Wm. Ostwald, a leading propagandist for the introduction of Esperanto in Germany. The aspiration of the Esperantists is a good sign of the growth of international goodwill and indicates an anxiety to break down national barriers, to overcome prejudice, and to establish a good *entente* in this Babel of diversified speech.

With all the interest we cherish for the promotion of cosmopolitan ideals, we do not believe that the aim can be reached by the short cut of an artificial language. We trust to nature and hope that nature herself will in the long run work out an international language, not by a formal agreement nor after the fashion of acts of international legislature, but by natural growth. When the time will be ripe the fruit will be developed, and we see the time coming when one speech will be understood all over the world. Esperantists are more enthusiastic and cannot bide patiently that far-away time. They think that by artificial methods they can improve upon nature's tedious processes.

Some time ago there was a general wave of enthusiasm for the introduction of Volapük, but the claim of its adherents that Volapük could be learned very easily and would be spoken universally in time, soon broke down under the fact that the new language was too German to be pronounceable by the French and English, much less by the Slavs and non-European nations. Reforms were attempted but finally the whole scheme was abandoned. At present Esperanto is in vogue. It comes with the same pretensions and we

are fully convinced will meet the same doom. We have criticized Professor Ostwald's objections to English as a world-speech and have devoted to the discussion of Esperanto several articles in *The Monist** including also for the benefit of our readers a short synopsis of the language itself,—its grammar, vocabulary and pronunciation. We have found that it is by no means as easy as it claims to be and that it would be far easier and much more useful to learn English than Esperanto.

We must consider that the use of words, phrases, etc., of all languages is determined by custom. If a language is sketched out ideally, so that, for instance, certain roots shall have definite modifications, and certain endings shall indicate definite grammatical relations, the number of word formations would be so great that we would be embarrassed by the wealth of the several modes of expression.

From among the many different possibilities, custom chooses one and stereotypes it to suit exact conditions. This process can not be done by grammarians in the study but must be accomplished in actual life by an exchange of thought guided by definite needs.

Habit has more to do with the formation and especially with the fixation of speech than the advocates of an artificial international language imagine. The writer has had sufficient opportunity to observe the truth of this when meeting with foreigners who spoke English with great fluency but had learned it in a theoretical way in their own country far away from English-speaking people. There are many expressions which logically should be perfectly correct to use, but habit settles on one special meaning and if the word is used otherwise it is apt to be misunderstood. One foreign child, for instance, said to her comrades at play, "If you succeed in doing this, you gain; if I do, I gain." She meant to say, "I win in the game," translating the French word *gagner* by the word "gain." I heard Germans speak of a "sandbench" when they meant a "sandbar" in the lake.

Since there are so many special cases in which thoughts or grammatical relations are specially needed, all languages which originally followed certain types of logical regularity form what stenographers call "word-signs," and so the irregularities of our grammar are by no means a fault of our languages but a very use-

* "An International Auxiliary Language," by Louis Couturat (with editorial reply), XV, 143; "Dr. Ostwald's Pamphlet on Universal Language," XIV, 591; "Esperanto," XVI, 450.

ful contrivance of nature. I wish to call attention further only to the fact, that it is not the far-fetched or rarely used words and forms which are irregular but the most commonly employed terms of our daily conversation, such as "to be," "to do," the pronouns, etc. This is true of all languages and indicates that irregularities have not been invented to bother schoolboys but to facilitate every-day speech, which after all is the sole purpose of language.

For these and similar reasons we deem it inadvisable to create an artificial language. We do not deny the possibility of its invention but we claim that such an artificial language as Esperanto or Volapük would have to adapt itself to the requirements of mankind and this might take centuries. If that is the case it appears naturally much easier to develop an existing language into a world-speech than to create a new one, and thereby to have mankind, in addition to the groping of the linguistic instinct, pass through all the intellectual measles of theorists. Incidentally we will repeat that while we deem the invention of an artificial international language a Utopian project, we trust that it would not be impossible to invent an international writing,—a pasigraphy which would be a universally recognized sign language which men of different nationalities might read, each in his own tongue. (See "Pasigraphy—A Suggestion," *Monist* XIV, 565.)

We are glad our criticism agrees with the opinions of philologists who must be regarded as experts in this matter. We are in receipt of a letter from Dr. Karl Brugmann, professor of Indo-Germanic languages at Leipsic, together with a pamphlet by himself and his colleague, August Leskien, professor of Slavic tongues in the same institution. It is entitled *Zur Kritik der künstlichen Weltsprache,* and contains a review of the latest aims in the direction of an artificial universal language with special reference to Esperanto. Professor Brugmann speaks of the difficulties that contend in general against such a project. He calls attention to the former labors of philologists (which however remained unheeded by the Volapükists), especially Ernst Beermann in his "Studien zu Schleyer's Weltsprache Volapük," (*Program of the Gymnasium at Ratibor,* 1890) and Gustav Meyer in his "Weltsprache und Weltsprachen" in the *Schlesische Zeitung,* 1891, No. 400 and 406, (republished in his *Essays und Studien zur Sprachgeschichte und Volkskunde,* Bd. 2, Strassburg, 1893, pp. 23-46).

Even in those days honest Volapükists acknowledged that "an average man needed hardly less time to acquire a mastery of Volapük

than of most natural languages" (p. 10). Volapük died a natural death. It was not suppressed by its enemies nor can it complain of any unfair treatment from outsiders. When the propaganda was at its height the difficulties began and it was felt that reform was necessary to render the language useful for practical purposes. Professor Brugmann says (p. 10): "The movement split into two camps. An international world-speech academy consisting of seventeen members belonging to twelve different countries sought to preserve uniformity and union." The inventor of Volapük, Rev. Schleyer, was expected to join them, "but he reserved to himself the right of vetoing their statutes in all questions of universal language. A union could not be attained and so the whole Volapük movement fizzled out."

Esperanto was invented by a Warsaw physician, Zamenhof, and is mainly built up of elements of the Romance languages with a sprinkling of German and Slavic. The program of Esperantists is to introduce it into schools and use it to meet the "needs of daily life, the purposes of trade and commerce, and also the demands of science." Professor Brugmann refers to the fact that only very few philologists have become partisans of an artificial language, but among them the famous Prof. Max Müller of Oxford has repeatedly expressed his sympathy with their aspirations without reserve, and has declared one after another of the world-languages to be the best possible attempt, which caused Gustav Meyer to remark "that it would be wise for every one who has reason to think that his comments will be printed or used for advertisements to keep a list of them himself. If Prof. Max Müller had done so he would not have forgotten when he wrote to Mr. Liptay [author of a *Gemeinsprache* in 1891] that he had given his blessing a short time before to Schleyer's Volapük."

Other philologists who are found in the ranks of Esperantists are Professors Schuchardt of Gratz, Baudouin de Courtenay of St. Petersburg, and Jesperson of Copenhagen, but how Platonic their interest must be appears from the fact that they simply sanction the idea without attempting an invention of their own, in spite of being themselves trained philologists. Professor Brugmann discusses the chance an artificial language stands of being a help in practical life, a medium of trade and commerce, and an assistance to science, and comes to the conclusion that in each case it would simply add more complications to existing conditions. "The real difficulties" says Brugmann (p. 22), "would begin only when the

adherent of a world language would think he had attained his purpose." That is to say, that at the moment when Esperanto was actually introduced as an obligatory study in our schools and used for international purposes, the differences and divergencies of opinion as to how best to meet them, would lead to so much trouble that the whole structure would collapse. The partisans of Esperanto are so carried away by their enthusiasm that they are intoxicated as it were by visions of success, where in reality an evident failure is but toned down by a little courtesy. It may be of interest to our readers to read what Professor Brugmann has written on the subject in his letter. He says:

"Perhaps you would like to take advantage of the opportunity to correct a great error which Ostwald has started in the world and which might work new mischief in the heads of the uninformed. Ostwald writes as follows in an article "Esperanto" in *Daheim* for 1907, No. 42, p. 21: 'Further, over 1200 university professors and members of scientific societies declared themselves in favor of the aims of the delegation, and although in Vienna the Association of Academies refused their active sympathy to our efforts, this was decided by such a close vote that it was nearly even. Here, therefore, was convened an intellectual army of no inconsiderable power.' The truth is that of the twenty-one associated academies only two or three had instructed their representatives to vote in Vienna that the Association should accept the proposed office of arbitrator. So the case is accurately presented by H. Diels, the secretary of the Berlin Academy, in the *Deutsche Literaturzeitung* for July 6, No. 27, 1896. 'At the conference proper, then, the final vote was taken on the 29th of May. The result is that the majority of the Academies refused any expression on the question at all, whereupon it may be noted that only a few of the minority, as was shown by the written expressions of these academies which were sent in before, really favored the plans of the delegation, while the greater number even within the minority desired a discussion only out of courtesy, but were themselves opposed to the project of a universal auxiliary language.' "

The second article in the same pamphlet is devoted to a criticism of the construction of Esperanto itself, and here Professor Leskien calls attention to the fact that Esperanto does not avoid the mistake of Volapük which contains a number of letters difficult to pronounce for the English and French, but it adds new complications in letters which are difficult for Germans to pronounce. Dr.

Zamenhof shows a special preference for complicated sounds such as *tsh, dzh,* etc., which necessitate the introduction of letters marked with special diacritical signs. He further overloads his language with diphthongs, each one having a pronunciation of its own. The plural ending *j* as in *bonaj viroj* will prove especially hard on the French and is certainly not easy to other people. While in English, *k* is dropped before *n* so that "knave" is pronounced as "nave," Zamenhof introduces the *kn* without hesitation. It would lead us too far to enter into all the details of the difficulties of pronunciation. We will only mention that differences of sense are introduced in unaccented syllables so as to obliterate the differences of sound: *mi amas* means "I love"; *mi amos,* "I shall love"; and *mi amus,* "I might love." How shall the ear catch these fine distinctions? Esperanto demands that every letter be carefully pronounced and Professor Leskien comments on it that "whatever Englishman, Frenchman, German or Scandinavian succeeds in distinguishing plainly such Esperanto words as *kiuj,* 'which'; *tiuj,* 'those'; and *tshiuj,* 'all,' deserves our full admiration." (P. 33.)

Esperanto also contains its amusing features which originate to a great extent in the rule that there must be no exceptions. As instances Professor Leskien calls attention to the fact that *patro* means "father," and *patrino* (literally translated "fatheress") means "mother." *Junulo* means "youth," and since the prefix *mal* denotes a contrast, *maljunulo* means "old man." *Predzhi* means "to pray," and since the place of action is formed by the ending *ejo, predzhejo* means "the place of prayer" or "church." Professor Leskien comments on the implication of thus forming a language: "If we now translate into Esperanto, 'The Pope is the head of the Catholic Church,' we see at once the folly of such formations, for *ecclesia* or 'the Church' means something quite different from the place of praying."

Professor Brugmann quotes Gustav Meyer's comparison of Volapük to a homunculus, that artificial manikin in the second part of Goethe's Faust, which is made by Professor Wagner. Brugmann says that the simile remains only a simile, but we would say that the comparison is more than a mere analogy. Languages are living organisms as much as animals, and it is not more or less possible to create spiritual than it is to create physical organisms.

* * *

In connection with the ideal of a universal world language it would be appropriate to add a few comments on the labors of the

Simplified Spelling Board whose circular No. I of March 21, 1906, with addendum, April 30, 1907, opens with the following passage:

"All whose mother-tongue is English believe that, if it is not unfairly handicapped, it will become the dominant and international language of the world. For this destiny it is fitted by its use as the medium of the widest commerce and the most progressive civilization, by its cosmopolitan vocabulary, and by its grammatical simplicity. No other existing speech, and none of the proposed artificial international languages, has the same adaptability to such a use. There is, however, a wide-spread and well-grounded conviction, that in its progress toward this goal our language *is* handicapped by one thing and one only—its intricate and disordered spelling, which makes it a puzzle to the stranger within our gates and a mystery to the stranger beyond the seas. English is easy, adaptable, and capable of a many-sided development: its spelling is difficult and cumbersome."

A protest must be entered here first of all against the first phrase, that "all whose mother-tongue is English" believe in its future. We are acquainted with many people of English birth who have not the same strong conviction, and what is more important, if they all believed as the Simplified Spelling Board would have them it would count for nothing, for even the Chinese believe that their language is the fit international medium of communication. It is too natural for everybody to think his own the easiest language of all. English is not the native tongue of the writer. On the contrary he acquired the language at a comparatively late period in his life, and yet he is fully convinced of the fact claimed by the Simplified Spelling Board that "it will become the dominant and international language of the world." It will attain this distinction by the simplicity of its grammatical and syntactical construction, and we believe that any simplified spelling will not only fail to be a help in the attainment of this aim, but will be a hindrance. This is one, and perhaps the main, reason why we have so far refrained from taking part in this reform movement of simplified spelling. The simplified spelling is without system except perhaps the tendency toward phonetic spelling, and we must here enter a second protest against the statement of the board that the traditional English spelling is a puzzle to the stranger within our gates. The writer at any rate knows from his own experience that his only difficulty with the English was its pronunciation while the spelling was one of the greatest helps to enter into the very spirit of the language. In fact it almost

seems as if the spelling were made for foreigners and if English were spelled phonetically it would add immense difficulty to such students. Only contemplate the word *sikik*. Who would at once connect with it the same idea as when he sees the word "psychic"? The foreigner would be as much if not more puzzled here than the native student, for when he becomes acquainted with the word he learns it through its derivation from the Greek. There is so little difficulty to the foreigner in the English spelling that in all the great spelling bees of the New York schools it is those foreigners who can scarcely speak English correctly who commonly carry away the honors.

While we do not deny that the spelling of English can be improved we believe that we are little helped by spelling "crusht" instead of "crushed" for the latter form is much more helpful by indicating at a glance that the word is a verbal form. "Past" as an adjective may very well be distinguished from "passed" the participle. Although it would be useful to spell "thru" in the simplified way without the cumbersome *gh*, yet the latter reminds us of its derivation from a Saxon word corresponding to the German *durch*; an analogous case is "though" which corresponds to the German *doch*.

To spell "quartet" instead of "quartette" is not advisable so long as we retain the French accent on the second syllable. But whatever objections we may have in detail, we think there is not much harm done if here and there a new spelling is introduced. We have so many words in English which are wrongly spelled historically (note e. g., the spelling of "could") that it would be instructive for the pedants of English orthography to learn to distinguish between right spelling that is simply due to custom, and correctness which is based upon linguistic facts and sound reasoning. Moreover we must not forget that spelling is no problem that involves grave consequences, and the salvation of our souls does not depend upon it. If the majority of people make up their minds to spell a word in a certain way we for our part are willing to submit, and if the spelling is not sensible we can yield to the popular demand without great compunctions of conscience. Even our great martyr president used to say in extenuation of poor spelling that that man must be a fool who could not spell a word in several ways.

The report of the Simplified Spelling Board continues:

"Apart from its relation to the foreigner, our intricate and disordered spelling also places a direct burden upon every native user

of English. It wastes a large part of the time and effort given to the instruction of our children, keeping them, for example, from one to two years behind the school-children of Germany, and condemning many of them to alleged 'illiteracy' all their days."

This claim is based upon a statement made by Prof. Max Müller which may or may not be true, for its verification is very difficult; but one thing seems certain, that if it be correct, we ought first of all to reform our methods of teaching English spelling before we start at the spelling itself. From what we know by personal experience and by inspection of the spelling primers, the methods of teaching orthography appear to be devised for the purpose of stultifying the children and making the study as hard for them as possible.

It does not seem reasonable to us that a "gradual simplification of the spelling will aid the spread of English." The only way in which English can take root among those nations which speak other languages would be by accustoming their children at a tender age to the sounds of English speech.

We are firmly convinced that the time will come when one language will carry us throughout all the countries of the world, and this will be brought about in the natural development of mankind even in spite of the wrong methods employed by the advocates of an artificial auxiliary language and a Simplified Spelling Board.

EDITOR.

REPORT OF THE DELEGATION FOR THE ADOPTION OF AN INTERNATIONAL LANGUAGE.

Carried to their ultimate conclusion, the efforts after international peace might be considered to lead ideally to one universal nation or brotherhood of nations, a universal religion and a universal language. It is surely as a step along this path of progress that many intelligent men and learned societies are advocating the adoption of an international auxiliary language which is intended to facilitate commercial and other relations between the countries of the earth. The official society of the advocates of such an international language is called the "Delegation for the Adoption of an International Auxiliary Language" (*Délégation pour l'adoption d'une langue auxiliaire internationale*), and it is a noteworthy fact that by July 15, 1907, its membership consisted of 301 societies and

1251 names of individuals belonging to university faculties and learned societies (including many of the Academies of the International Association). The societies include commercial, literary, scientific societies, even trade guilds such as the Belgian Society of Engineers and Industrial Workers, geographical societies, humanitarian associations and international camps of every variety.

The Delegation publishes a summary of the twelve hundred individual names arranged by cities. Of course Paris has much the largest number, as eighteen institutions of that city are represented, and very fully. We find names also from the universities of Michigan, Ohio, Missouri, Southern California, Nebraska, Pennsylvania, Washington, Yale, Harvard, Princeton, Columbia, Cornell, Johns Hopkins; Bryn Mawr and Williams Colleges; American Academy of Arts and Sciences at Boston, Virginia Polytechnic Institute, and the Academy of Science at Washington, D. C. Of some of the Western ones of these American institutions more than twenty names are enrolled, and even Princeton has eleven representatives. Further particulars may be obtained by application to the secretaries of the Committee of the Delegation, M. Louis Couturat (Treasurer), 7 Rue Pierre Nicole, Paris (Ve); and M. L. Leau, 6 Rue Vavin, Paris (VIe). These gentlemen have issued a report on the proceedings of the Delegation with relation to the Academies which pertains to the subject under discussion by Professor Brugmann, as quoted by Dr. Carus on another page of this issue ("Philologists' Views on Artificial Languages"). The Report quotes the letter of the Academy of Vienna written in response to a request of the Delegation, endorsed by eight prominent men including Couturat and Ostwald, that the Imperial Academy of Vienna as the presiding Academy should include the question of the choice of an international auxiliary language in the program of the approaching general assembly. The letter is addressed to the other academies of the Association asking them to vote for or against the insertion of this point in the program of the meeting, but adds certain suggestions for their consideration which, translated, read as follows:

"Since according to Section 3 of the By-laws only such objects as are proposed by one of the associated academies may be taken into deliberation, we had first to ask the members of our Academy whether they would consider it desirable to make such a motion. The result of our deliberations was that it hardly seemed advisable to pass over in silence a petition supported by such learned names

and also, as we well know, by a much greater number of important people. On the other hand, the difficulties of the affair itself cannot be ignored nor the strictly circumscribed limits which have been set in Section 3 of its By-laws to the operations of the Association." From this standpoint the Imperial Academy of Vienna proposes to its correspondents (1) that the International Association will place the petition of the Delegation on the program at the approaching general assembly; (2) that the Association should decide that it does not consider itself competent to undertake the choice of an international auxiliary language without entering into the question too deeply.

Such was the final official action of the Academies, and the Delegation as represented in its Report does not consider this result as in any way derogatory to the cause; for, they say, it is clear that the Academies have not entered deeply into the question and have decided nothing except that it did not come within their province. Moreover the Academy of Vienna did say that "a solution will be found by the empirical paths hitherto trod; i. e., by intelligent attempts, and careful adaptation to the actual needs, more readily than by theoretical investigation," thus implying (in the opinion of the Delegation) the possibility of a practical solution. Since it is necessary to find a solution adapted to definite needs, this is the task that has been undertaken by the Delegation, and the action of the Academies gives them assurance that the Delegation through its committee will solve the problem more quickly and satisfactory than the Academies could, and that the decision of the committee will bear more weight in the eyes of the people than a commission chosen by the Associated Academies. Accordingly a committee of twelve men was chosen for the task with MM. Couturat and Leau (above mentioned) as its secretaries.

L. G. R.

SAMPSON AND SHEMESH ONCE MORE.

An article[1] in *The Monist* of January, 1907, in which I denied the identity of Sampson the Hebrew Shophet with Shemesh the Chaldean god, has given rise to a book entitled *The Story of Samson*, recently published by the eminent editor Dr. Paul Carus. In it

[1] This has been published in the Appendix of *The Story of Samson*, p. 173. (Open Court Publishing Co., 1907.)

he treats the story of Sampson as a myth deriving its origin from the worship of the god. No one can read without interest the learned compilation which the book contains, of facts connected with the early religious history of mankind; but to me these facts do not seem to sustain its conclusions.

The arguments in favor of Dr. Carus's theory are really two: the name of the man, and the vicinity of Beth Shemesh, (regarded as a temple of Shemesh) to the scene of Sampson's career.

1st. The name Sampson (Shimshon) is interpreted to mean a solar person. On this point Dr. Carus has the authority of modern philologists. I have that of Josephus in maintaining that the name denotes, not a solar man, but a strong man. Josephus testifies as to a fact concerning which he cannot have been in error. As to the manner in which the mistake of the lexicographers may have arisen, I have nothing to add to my remarks in a former article.

2d. There was a small town in the territory of the tribe of Judah and near Sampson's residence, called Beth Shemesh. After the Jewish conquest, the Canaanites continued to occupy it jointly with the invaders. It is assumed that it was the site of a sanctuary of the god Shemesh. The word Beth in connection with the name of a deity sometimes designated a temple of that deity. Of this we have an example in the term Beth Dagon for the temple of Dagon at Ashdod. The terms Beth Shemesh and Ir Shemesh, house and city of the sun, have suggested the idea that the old village was a scene of Shemesh worship; but the conjecture rests on no solid foundation. There is no evidence in the Bible, or elsewhere so far as I am aware, that the god was worshiped in Palestine, nor does the word Shemesh occur there save in the ordinary sense of the sun, unless as an element in the name of that place. As such an element it admits of the ordinary explanation. The name Beth Shemesh, or sun house, probably meant simply a place for drying fruit. We know that the people of southern Palestine made great use of dried grapes. A dry house, or as it is termed in California, a curing house, where their delicious fruit was collected and made into raisins, might well become the nucleus of a town, just as a little station in Dakota where wheat is bought, grows into a village. That such may have been the case with Beth Shemesh becomes more probable when we consider that there were three cities of that name, —the one above mentioned in the territory of Judah, one in that of Naphtali, and one in that of Issachar. How many dry houses there may have been around which no towns grew up, does not appear.

A confirmatory instance is found in the name Beth Dagon. In one instance it denotes the temple of that god at Ashdod. There may be another instance of such a temple at Gaza, but it is doubtful. If Dagon[2] and Dagan[3] are merely variations of one word, Beth Dagon meant originally a corn house, a granary. Ashdod may have grown up around a granary. The names Ashdod (stronghold) and Beth Dagon give a glimpse of its growth. A granary, a town, a stronghold with its temple, standing perhaps on the site of the original granary. There was another Beth Dagon in the territory of Judah and one in that of Asher. Is it probable that all these were temples? The word Beth as an element in the name of a town often occurs when the other element excludes the idea of a temple, as Beth Phage (green fig house), Beth Hacherem (vineyard house). There are other towns where the word Beth has been imagined to denote a temple, as Bethlehem (bread house), conjectured to have been a temple of Iachmi, a god not known to have been worshiped in Palestine, and Beth anath (audience house or *Hörsaal*) supposed to have been a temple of Anat, a goddess equally unauthenticated in Palestine. Bethel (house of God) was a name given by the Jews to the old Canaanite town of Luz (almond tree) after the ark had been located there.

Attentive examination of the names of localities in southern Palestine reveals much concerning the pursuits of the people, but little relative to their religion. The names of numerous towns denote that agriculture was the main subject of thought. The following are names of towns mostly in the territory of Judah and Dan: Hazequah, New tilled land; Shilehon, Sprouts; Eshtaol, Setting; Beth Tappuach, Citron house; Carmel, Orchard; Zorek, A kind of fine wine; Rimmon, Pomegranate; Hanab, A place of grapes; Gath, A vat; Gittayim, A double vat; Hagderah, The hurdle; Gderesthayim, Two hurdles; Beth Phage, Fig house; Marmanah, Dung heap; Sansannah, Palm branch; Luz, Almond tree; Ain Gannim, Garden spring; Hak-kerem, The Vineyard.

The people who gave these names were thinking of the cultivation of the grape, the fig, the almond, citron and pomegranate; productions collected at various places, and sent as wine or raisins or other cured fruit to the port of Ascalon to be shipped to the great markets of Egypt and Phœnicia.

Concerning the religion of Palestine before the Jewish invasion

[2] דָּגוֹן [3] דָּגָן

our knowledge is imperfect. It appears that there was a sanctuary at Jerusalem (the city of peace) where disputes were adjusted by a ruler whose name or title denotes a judicial office. Abraham finds Melchizedek there (the just king), and Joshua, Adonaizedek (the just lord). Nearly a hundred and fifty years before the time of Moses, and in the reign of King Amenophis IV, the ruler at Jerusalem was Abdi Dhaba, whose correspondence with that Egyptian king was found at Tel el Amarna. In one letter he speaks of the temple at Jerusalem as a temple of the great god Uras. Winkler identifies this deity as the Assyrian god Ninip, and the identification throws light on the whole religious history of Palestine. Herodotus, who was very careful and conservative in his identification of foreign and Hellenic gods, upon his arrival at Tyre, at once recognized Hercules in the Baal of the great temple which had stood there for ages. He gave him no other name than Hercules. Josephus also identifies the Tyrian Baal with Hercules. The term Baal (lord) and the other term by which the Tyrian deity was known, Melcart (city king) are so general as to give no definite information; nor is the name Moloch (king) more specific. Berasus, however, gives an item which affords the necessary identification. He says that Hercules was Sandes (Σάνδης) Oppert has identified Sandes with Ninip. Ninip was, like Shemesh, one of the great gods of the Chaldean Pantheon, but of different character. He was the resistless champion rather than the august judge. While the main temple of Shemesh was at Seppara, and he was called Shemesh of Seppara, that of Ninip was at Calah, and he was called Ninip of Calah. The latter place was identified by Rassam as Nimrud.

When Layard excavated at Nimrud the temple built by Shalmeneser I and Tiglath Pileser, he at once identified Ninip as Hercules, just as Herodotus had done at Tyre twenty-three centuries before. We can from these identifications comprehend how this worship of the Tyrian Baal, the Jerusalem Uras, the Ninevite Ninip, tended constantly to become the prevalent religion of Palestine. It was a national religion of the Canaanites, who were largely intermingled with the Jews. It was not merely the religion of a conquered people, all the dearer because regarded with aversion by their conquerors, but also that of adjacent nations more powerful than the Jewish kingdoms.[4] The wealth and civilization of Tyre, the supremacy of Nineveh, the magnificence of the temples of these

[4] The two Ishtars (of Nineveh and Arbela) under the plural form of Ashteroth were worshiped also at Tyre and Carthage.

great cities overwhelmed the popular mind. The rank of the ancient gods was largely determined by the power of their respective cities. The superiority of Tyre and Nineveh seemed to falsify all that Hebrew priests or prophets could say of the omnipotence of Jehoveh. It was mainly at Jerusalem that the worship of Jehoveh was maintained, and the removal of the principal part of the population of that city, who preserved their religion zealously in captivity, kept in observance a religion which had lost ground in the greater part of Palestine.

All this goes to show that an inhabitant of Palestine, devising a myth of a Jewish hero invested with the character of a heathen god, would have selected the Assyrian and Phœnician Ninip as a prototype, rather than Shemesh, a remote and unfamiliar Chaldean deity; and if he had given his subject a divine name, would have used that of Baal. The Carthaginians made use of that name in forming proper names, as Hannibal, Hasdrubal, etc.

There are several features of the Sampson legend which to me seem to import historical verity.

First. The story of the jaw-bone of an ass. The utter absurdity of the story literally taken suggests some similar absurdities easy of explanation. Kohlrausch, in his history of Germany, says that a large number of the Swiss who fought at Morgarten were armed with morning stars. The absurdity disappears when we learn that a *Morgenstern* was a mace with spikes like the rays of of a star. The Duke of Wellington expressed himself as satisfied with Brown Bess as a weapon for the English infantry. Brown Bess was a familiar term for a regulation musket. If we observe the representations on the monuments of a heavy Egyptian battle axe, with its blade shaped like the jaw of an ass, and the projecting knobs which imparted weight to its impact, we shall at once see how it might have got the name of an ass's jawbone. It was a ponderous two-handed weapon, only used by the strongest men of the Egyptian army.

The occasion when the weapon was wielded seems to have been one of a stratagem. The Philistines demand that Sampson be bound and delivered to them. He is brought, apparently bound, but at the right moment the bonds are thrown off and weapons provided. Sampson seizes the pole axe and with his fellow countrymen, attacks the enemy. He and his friends acted valiently no doubt, but the thousand he slew were like the tens of thousands slain by David in

the triumphal songs of his countrywomen. The rout of the Philistines was the real fact.

Second. The exploit of Sampson in carrying off the gates of Gaza. I do not understand with Dr. Carus and the translators of our received version, that he carried them to the top of a hill that is before Hebron, a distance of many miles. The original is:

וַיַּעֲלֵם אֶל רֹאשׁ הָהָר אֲשֶׁר עַל־פְּנֵי חֶבְרוֹן

I think the preposition has here the meaning of *versus*, towards, and that it means out on the Hebron road, perhaps a very short distance from the city.

Third. Dr. Carus has expressed the idea, in which I fully concur, that the circumstances attending the death of Sampson are represented as occurring at a kind of Saturnalia. The name Saturnus was derived from *satu*, a supine of *sero*, and denotes a sower. And in like manner Dagon probably comes from D^aG^aH,[5] "cover," and denotes the covering of the seed. The saturnalia was a harvest festival in which the people of Rome gave themselves up to hilarious rejoicings. The Jews likewise had their harvest feast of tabernacles. The Philistines, an agricultural people, must have had some festival of the kind. Sampson was brought to a festival. It was a national affair. "All the lords of the Philistines" were there. The translation is here indefinite, but the original is very definite. The "Serens," or lords of the Philistines, a title not elsewhere applied, were five in number, the chiefs or kings of the five cities. They met at the great temple of Dagon. We know of no other temple of Dagon than that of Ashdod, where the ark was kept during a portion of its captivity, and that city was the most central of the Pentapolis. It was there probably[6] that the great concourse assembled to thank the venerable god for the bounties of the year, and indulge in the extravagances of popular joy. The Hebrew captive was brought out and treated with sportive deference before being sacrificed. Dagon, like Saturn and Moloch, was pleased by a human sacrifice, and the people were full willing to sacrifice a captive who had done them so much harm. So the multitude gathered in and about and even upon the huge temple. Beneath the multitude on the roof, the whole building suddenly collapsed with frightful loss of life, and among the rumors that arose was one that Sampson had pulled out the supporting columns. Whether true or not, the report

[5] דָּגָה

[6] The Tel el Amarna correspondence shows a temple at Gaza which appears to have been one of Ninip—not Dagon.

was favorably received by his countrymen, who rejoiced in so signal a vengeance, and was incorporated in the legend of his life.

I still believe that the Sampson legend is a genuine tradition of fact, though not unmingled with the alloy of exaggeration and rumor with which all tradition is combined. Sampson was an actual Jewish Shophet, and not an imaginary Chaldean god.

GEO. W. SHAW.

DR. PFLEIDERER ON THE SAMSON STORY.

(A Translation.)

To the Editor of The Monist:

I have read with great interest your essay on the Samson myth in the January number of *The Monist,* and agree with you on all essential points, especially when you find in Samson and analogous heroes in whom an incarnated god fights, strives and conquers, a typical ideal which has received its most excellent fulfilment in the Christian faith. The question whether any particular myth has its origin here and there in historical legends, or whether the legends have grown out of the myth without any historical foundation, you leave undecided. I too think that it is not to be answered *a priori* and universally but only in each concrete case under exact investigation of the tradition. But for the Samson myth I would consider a historical foundation as improbable as for that of Heracles and Izdubar. The localization of mythical features may be followed up in every case and is closely connected with the different places of worship at which the myth becomes realized in the ritual drama. Your observation is excellent that the Easter ritual of the Greek Church is formed after the dramatic representation of the Attis and Tammuz festival (page 74). But why is this said to have taken place only since the time of Constantine? Should not rather our Gospel Easter story have found its most simple explanation in the imitation of the Syrian Easter festival? I have pointed this out in my last two books (*Entstehung des Christentums* and *Religion und Religionen*) and in my opinion it deserves serious consideration. Then also the parallel of the Evangelical Passion story with the *Spottkönig* of the Saceans and Saturnalians must not be overlooked. If one will but consider that from the beginning the death and resurrection of the God-man has been the main content of the Christian faith which alone was recognized by Paul and which Mark

considered of first importance, then the question of the historicity of this content becomes clear and constantly more important. I would like very much to learn your opinion about the hypotheses of Benjamin W. Smith (*Der vorchristliche Jesus*) and Thomas Whittaker (*Origins of Christianity*). It would be serviceable if you would bring these radical theories into contrast with my comparatively conservative view, and would instruct your public about this crisis at the very beginning of primitive Christianity.

DR. OTTO PFLEIDERER.

GROSSLICHTERFELDE, GERMANY.

THE LOGICAL ASPECT OF THE THEORY OF HYPER-SPACES.

A study of the articles on hyper-spaces by Cassius J. Keyser in *The Monist* for January 1906 and by W. B. Pitkin in the January number this year seems to me to reveal pretty clearly an error into which certain mathematicians have fallen in the consideration of this subject. But the curious thing in Mr. Pitkin's article is, that, although he is sufficiently aware of the error to perceive it in others, he partly falls into it himself in pointing it out in them. In short, he only partly perceives the error.

The error is in trying to generalize the idea of dimensionality. The truth is that dimensionality is a property peculiar to space. Dimensions determine space and other properties determine other things. But, as Mr. Pitkin says, while the dimensions of space are determinants, the determinants of things other than space cannot be called dimensions.

But the proof of this fact depends, I think, on differences more thorough and radical than Mr. Pitkin is aware of.

The striking peculiarity of the dimensions of space which distinguishes them from the determinants of sound or color or anything else, is the fact that they are all identically the same in kind. For convenience in conversation we refer to them as length, breadth, and height. But, as regards the determination of a given space, it is of absolutely no importance which dimension we term length, which breadth, and which height. A striking result of this peculiarity is that any two or all three of these dimensions may be multiplied together and an intelligible result produced thereby. The fact is that the dimensions of space are themselves space-forms of space.

The three dimensions of a space are all lines. We use one-dimensional space to express the dimensions of three-dimensional space. Besides this, it is not altogether accurate to describe space, as we know it, as three-dimensional. It is not the whole truth. For we are just as familiar with two-dimensional and one-dimensional space as we are with three-dimensional—to say nothing of the point which is of no dimensions. Three is simply the greatest number of dimensions that most men are capable of perceiving. And it is just this actual existence of space of less than three dimensions which opens up the possibility of the existence of space of more than three dimensions.

Now what is the case as regards the determinants of a musical note—pitch, timbre, and loudness? Are these all identically the same in kind? Could we just as well call pitch loudness, or timbre pitch? Moreover is there any such thing as a one-dimensional tone —say of loudness only, or pitch only? or a two-dimensional tone of pitch and timbre without loudness? or can we multiply pitch and timbre together and produce a result which has any meaning? or can we obtain anything intelligible by multiplying pitch, timbre and loudness together? All this is sheer nonsense! As well talk of multiplying coal-tar by sawdust and thus producing music.

These considerations completely knock the bottom out of the argument by which, from the analogy of tones, Mr. Pitkin seeks to establish the impossibility of a four-dimensional space. Nothing at all analogous is to be found in the science of sound or color or anything else. The three known dimensions of space being all exactly the same kind, the existence of a fourth dimension of the same kind is easily conceivable. But in the case of a musical note, if we think of a fourth determinant, the question at once arises, of what kind is it to be? In the case of a fourth dimension of space, no such question arises. A tone having three determinants of three different kinds, plus a fourth of the same kind as one of the other three, is a grotesque lop-sided conception possessing no sort of resemblance to a space having an extra dimension of the same kind as the three which we are now able to perceive. Moreover, a precisely similar argument might be used to disprove the existence of space of *less* than three dimensions; whereas it is a matter of common every-day experience to all men that such spaces actually exist.

These considerations seem to me so obvious that I am surprised that it should be necessary to point them out. I am no

scientist. I am a mere man-in-the-street, or rather—in the jungle. I am, however, an engineer by profession; and perhaps, as such, I have had more to do in the way of measuring spaces than falls to the lot of men in other professions. I have been at it every day of my life for the last twenty and odd years. And it is possibly this extreme familiarity with the dimensions of space that has given me a more than usually vivid conception of what dimensionality really is. Moreover this is not really a question of science at all, but of philosophy—a question of pure reason—of logic—of mathematics. And that is a faculty born in man, and one in which those most renowned in scientific research are often deficient. The discovery of facts and the discovery of the necessary relationships between facts are two distinct departments. The philosopher does not concern himself with the discovery of facts. He is content to get his facts ready made from the scientist. And it would perhaps be well if scientists would leave philosophy to philosophers. In science, the rôle of the philosopher is that of the spectator, who sees most of the game.

The logical aspect of the theory of hyper-spaces is perfectly sound. Philosophy has shown conclusively that four-dimensional space *may* exist. The acceptance of the idea introduces no discord, no break in the continuity of our knowledge. It is not *contradicted* by any known scientific facts. *But*—whether four-dimensional space actually has any real existence has yet to be proved. That is a question of simple scientific fact. The claim of some that they have by practice actually become capable of intuiting a fourth dimension is no proof of its existence. It only proves that these people have very strong and vivid imaginations. By mathematics one might calculate to the minutest detail what a four-dimensional body would be like. And by an adequate imagination we might picture it to ourselves in the minutest detail. The novelist, Mr. Wells, has carried out a process very similar to this with regard to the hypothetic inhabitants of the moon. But scientific proof of the existence of the inhabitants of the moon, and of the fourth dimension, are at present both conspicuous by their absence.

The lines which such scientific proof must take may perhaps be roughly indicated in advance.

It must be either direct or indirect.

The direct proof would be to make the fourth dimension actually visible to us by some kind of microscope or other-scope.

The indirect way would be as follows. If there is a fourth

dimension, then certain results must follow which can be demonstrated in the three-dimensional world—then demonstrate them. For instance, if a space be completely closed as regards its three apparent dimensions, but if nevertheless there is an unapparent fourth dimension, in the direction of which it is wide open, then a solid body could be introduced into that space along that fourth dimension. Search for an instance of such a phenomenon! Some spiritualists claim to have cases on record.

Indirect evidence, however, is not conclusive, unless it can be shown that no other explanation is possible. And, trickery apart, explanations other than a fourth dimension, but perhaps no less marvelous, would, in this case, be conceivable.

W. E. AYTON WILKINSON.

THANATPIN, PEGU, BURMA.

A MULTI-DIMENSIONAL SPACE CONCEPTION.

(A Translation.)

To the Editor of The Monist:

First of all I must express my thanks to you for the unusually sympathetic words with which you commented upon my new geometrical theory in the April number of *The Monist* (p. 316). For this reason I feel the more in duty bound to call your attention to one place in the review which is inaccurate because of my own fault.

After you placed an emphasis, quite rightly, upon the fact that my theory "beats Riemann's curved space and also Bolyai and Lobachevsky," you add that "even the believers in the fourth dimension must confess that they are left behind." This is evidently founded upon the oft repeated statement in my book that extended space can have not only four but even five and six dimensions but no more. But in a correction which I have added as an additional independent supplement I have corrected this statement to the effect that the supposed five- and six-dimensional octahedral space would have to be identical with the quadratic five- and six-dimensional space; and that since this last is not possible, extended space can not have more than four dimensions.

Nothing indeed has been gained *in principle* by this correction, for in principle only the assertion which is carried out in the book is correct, namely that *extended* space can not exceed a definite

number of dimensions. The believers in the fourth dimension would find themselves deceived if in their statements they were henceforth to rest upon my geometry; for although according to their principles objective space must necessarily have four dimensions if it be eternal, it follows at the same time from the same principles that this can not be the case, and that if the multi-dimensional world is eternal it could exist originally only in *n*-dimensional *unextended* space as I have pointed out in my book (pp. 264-6).

DR. BRANISLAV PETRONIEVICS.

PARIS, FRANCE.

BOOK REVIEWS AND NOTES.

A LITERARY HISTORY OF PERSIA. By *Edward G. Browne.* New York: Scribner, 1906. Pp. 568.

Persia with its literature, religious development and civilization is less known than it deserves to be. Though at present a state tottering under the aggressive inroads of Western civilization, it looks back upon a history of which it surely may be proud, not counting the history of ancient Persia which has originated after its acceptance of Islam. We must confess that even fairly well educated people are very little conversant with its rich literature, secular as well as religious. The only name that has come to the knowledge of the average man is perhaps that of the epic poet, Firdawsí (Firdusi). We are indebted to Professor Browne, of Oxford, England, for much that we know concerning Behaism which started in Persia under the name of Babism, and developed under the very eyes of our present irreligious generation, a new religion full of enthusiasm and filled with the spirit of martyrdom, exhibiting many phases similar to Christianity in its earliest days. To him we owe the best and most reliable information that we possess in regard to Persian language, literature and history. The present book opens to us the wealth of Persian literature from Firdawsi to Sa'di. Considering the ignorance that generally prevails on the subject it seems almost hopeless to give a sketch of its contents, for it would necessarily consist of mere names which in their foreign accent would be a sound without meaning, and so we will limit ourselves to one quotation only taken at random and selected on account of its religious significance. Among Persian poets the mystics have attained a prominent place, and among the mystic poetry there is one entitled "Mantiqu't-Tayr," which is an allegorical epic describing the quest of the birds for the mythical Simurgh. The latter typifies God, "the Truth," the spiritual aim of all aspiring souls . In the course of a discussion of the birds who make their excuses as to why they give up the pursuit of this great goal, their leader, the Hoopoe, describes the road to Simurgh, and in doing so mentions that in their search they must pass through annihilation, and they will be purged of all self and purified by their trials, yet in finding the Simurgh and losing themselves they will after all find themselves.

Professor Browne describes the passage in a literal prose translation as follows:

"Through trouble and shame the souls of these birds were reduced to utter Annihilation, while their bodies became dust.

"Being thus utterly purified of all, they all received Life from the Light of the [Divine] Presence.

"Once again they became servants with souls renewed; once again in another way were they overwhelmed with astonishment.

"Their ancient deeds and undeeds were cleansed away and annihilated from their bosoms.

"The Sun of Propinquity shone forth from them; the souls of all of them were illuminated by its rays.

"Through the reflection of the faces of these thirty birds (*si murgh*) of the world they then beheld the countenance of the Simurgh.

"When they looked, that was the *Simurgh*: without doubt that *Simurgh* was those thirty birds (*si murgh*).

"All were bewildered with amazement, not knowing whether they were this or that.

"They perceived themselves to be naught else but the *Simurgh*, while the *Simurgh* was naught else than the thirty birds (*si murgh*).

"When they looked towards the *Simurgh*, it was indeed the *Simurgh* which was there;

"While, when they looked towards themselves, they were *si murgh* (thirty birds), and that was the *Simurgh;*

"And if they looked at both together, both were the *Simurgh*, neither more nor less.

"This one was that and that one this; the like of this hath no one heard in the world.

"All of them were plunged in amazement, and continued thinking without thought.

"Since they understood naught of any matter, without speech they made inquiry of that Presence.

"They besought the disclosure of this deep mystery, and demanded the solution of 'we-ness' and 'thou-ness.'

"Without speech came the answer from that Presence, saying: 'This Sun-like Presence is a Mirror.

"Whosoever enters It sees himself in It; in It he sees body and soul, soul and body.

"Since ye came hither thirty birds (*si murgh*), ye appeared as thirty in this Mirror.

"Should forty or fifty birds come, they too would discover themselves.

"Though many more had been added to your numbers, ye yourselves see, and it is yourself you have looked on.'"

Professor Browne, in presenting the products of his labors, touches in the preface upon our narrowness and self-conceit. He insists that our form of civilization, and our modes of thought are not the only possible ones, and he would concentrate his efforts toward the broadening of our religious, material, and humanitarian ideals. The passage is so characteristic that we here reproduce his own comment on his book:

"The work itself has had my whole heart, and I would that it could also have had my undivided attention. For Islam and the Perso-Arabian civilization of Islam I have the deepest admiration; an admiration which it is especially incumbent on me to confess at a time when those are so much misunderstood and misrepresented by Europeans; who appear to imagine that they themselves have a monopoly of civilization, and a kind of divine mandate

to impose on the whole world not only their own political institutions but their own modes of thought. Year by year, almost, the number of independent Muslim States grows less and less, while such as still remain—Persia, Turkey, Arabia, Morocco, and a few others—are even more and more overshadowed by the menace of European interference. Of course it is in part their own fault, and Asiatic indifference and apathy combine with European "earth-hunger" and lust of conquest to hasten their disintegration. To the unre-reflecting Western mind the extinction of these States causes no regret, but only exhilarating thoughts of more "openings" for their children and their capital; but those few who know and love the East and its peoples, and realise how deeply we are indebted to it for most of the great spiritual ideas which give meaning and value to life, we feel, with Chesterton's "Man in Green," that with the subsidence of every such State something is lost to the world which can never be replaced."

DIE ENTWICKLUNG DER ALTCHINESISCHEN ORNAMENTIK. Von *Werner von Hoerschelmann*. Beiträge zur Kultur- und Universalgeschichte Herausgegeben von *Karl Lamprecht*. Vol. IV. Leipsic, 1907. 48 pages and 32 plates. Price, 5.40 m.

It is gratifying to see that the subject of a doctor-thesis of Leipsic has been chosen from the field of Chinese archeology, and that interest in things of Chinese antiquity seems to be growing in Germany. The principal idea of the author is to establish a series of developments in ancient Chinese ornamentation from an original geometrical state gradually leading into a more and more realistic aspect. On the whole, he is correct in this thesis, and proves it by consulting ample material drawn from the Po-ku-t'u and K'ien-lung's Catalogue, the two best-known archeological productions of the Chinese. The limitation to Chinese drawings certainly has its disadvantages, as they are not always correct in regard to proportion, and in some cases do not even fully reproduce the whole of the decoration on the larger bronze vessels. This drawback is most obvious in the metal mirrors, in which the flat Chinese engraving entirely fails to bring out the relief-character of the design, and most of which are simply misdrawn. It is matter for regret that no legends are attached to the plates, and that no list of plates is given, and as an index is also lacking, it is possible only after considerable loss of time to hunt up what the author has to say about his illustrations. Nor is there, after all, a technical necessity for arranging pure line engravings on plates; they easily and naturally find their place in the text, where the reader can comfortably compare them with the description.

As the author is not familiar with Chinese, he consulted Prof. A. Conrady of the University of Leipsic, who most generously assisted him with his wide knowledge of Chinese literary and archeological subjects, and contributed many valuable notes to the paper. But without such assistance, he could have well availed himself of the bas-reliefs of the Han time, conveniently accessible through the work of Chavannes. Although we concur with the author in the general result of his industrious and interesting investigation, we are not always inclined to approve of his methods, or to agree with his opinions and evolutionary constructions of ornaments in every case. But it is impossible

to dwell on these points in the brief space of a review, as it would lead us too far away into general discussions of the whole question of ornamental development. Wundt's *Völkerpsychologie* is not a trustworthy or authoritative guide in this line, as the author seems to assume; and it is rather strange that the numerous researches of this subject carried on in America now for a decade, which have thoroughly revolutionized all former views, have hardly penetrated into the thoughts of Europe, except in a few ethnological circles. Such a fundamental question, for instance, as the dependence of an ornament upon the peculiar technique of the object to which it is applied,—a question much ventilated by Karl v. d. Steinen during recent years,—is not even touched upon in the present paper. The interpretation of the subject of the two prancing animals on the bronze figured on Plate XXII as being derived from a West-Asiatic or Babylonian model is not plausible. The characteristic feature of this representation is, as the author too justly emphasizes, the ornamental filling in of the two animals. This peculiar method, however, is, as S. Reinach ("La représentation du galop dans l'art ancien et moderne," extrait de la *Revue Archéologique*, Paris, 1901, pp. 67, 68) has correctly demonstrated, characteristic of ancient Siberian art, and widely made use of in it. From there, I should venture to think, the Chinese motive also is derived. The man in front of the horned animal outlined on the same object is a very frequent theme on the reliefs of the pottery vases of the Han dynasty, and there is no reason to suspect the exercise of any foreign influence on such a simple and primitive affair. But whatever divergences of opinion there may be, Mr. v. Hoerschelmann has undeniably furnished a useful and meritorious contribution to the history of Chinese ornaments, the study of which it is hoped will be continued by him.

B. LAUFER.

DIE TIBETISCHE UEBERSETZUNG VON KALIDASAS MEGHADUTA. Nach dem roten und schwarzen Tanjur herausgegeben und ins Deutsche übertragen von *Hermann Beckh*. Aus dem Anhang zu den Abhandlungen der Königl. Preuss. Akademie der Wissenschaften vom Jahre 1906. Berlin, 1907. 85 pages.

EIN BEITRAG ZUR TEXTKRITIK VON KALIDASAS MEGHADUTA. Von *Hermann Beckh*. Berlin, 1907. 37 pages.

With these two papers, Dr. H. Beckh introduces himself into the scientific world. The last-named he has recently presented as his thesis to the University of Berlin, and he has subjected the Tibetan translation of Kalidasa's Meghaduta to a most careful and minute study.

In the first treatise he gives a critical edition of the text in Tibetan characters based on a comparison of the three Tanjur copies of St. Petersburg, Berlin, and London, and accompanied by an elaborate array of critical notes. Then follows a literal translation after the Tibetan text, which is very instructive, as the author has added in parentheses many Tibetan-Sanskrit equations, and imparts full explanations of many poetical phrases and compositions, from which Tibetan lexicography will obtain a rich harvest. These results, the author promises to work up in a third paper.

In the second contribution he is engaged in the question as to what can be learned from the Tibetan version in regard to the Sanskrit text. Of primary

importance here, of course, is an inquiry into the time when this translation was made. The epoch of the translators named in the colophon is thus far unknown, but from internal evidence the conclusion is warranted that the Tibetan Meghaduta refers to the thirteenth century A. D. One of the most interesting results of Dr. Hermann Beckh's investigation is that the Tibetans were not acquainted with the commentary of Mallinatha. In many respects this Meghaduta translation is greatly distinguished from the usual method of the Buddhistic texts, being extraordinarily free and skilful; and the author lays stress on the understanding with which the translator has grasped, upon the whole, the thoughts of Kalidasa, and reproduced in his language the intricate style of the Mahakavya. Among the various Sanskrit editions, the Tibetan version stands nearest to that of Wilson (Calcutta, 1813), and is farthest removed from that of Mallinatha; but it cannot be looked upon as the genuine and original text of Kalidasa, as doubtless unauthentic stanzas have been received into it. The independence of the translation renders it difficult to establish confidently the Sanskrit reading which may have crossed the mind of the Tibetan. Dr. Beckh scrutinizes all cases with an almost microscopical analysis, and dwells in particular on the passages where the Tibetan version harmonizes with Wilson and the Singhalese edition against Mallinatha. Altogether the merits of the author's most thorough and painstaking work, on which he deserves hearty congratulations, can hardly be overestimated, and it is not too much to say that it presents the best that has been done for years in the line of Tibetan philology. No one who takes an interest in Kalidasa can pass by his investigation, and no student of Tibetan language and literature should neglect to work through this text with his translation and notes, which will reveal to him an entirely new and unsuspected form of this interesting idiom. We also wish to express our undisguised satisfaction at welcoming in Dr. Beckh a new worker in this woefully neglected field, and one who bids fair to advance its cause by the intelligence and quality of his work. We take the opportunity of calling his attention to the Tibetan version of Açvaghosha's Buddhacarita in the Tanjur, which would well repay a complete edition and translation. Several have begun to cope with it; the late Dr. Wenzel was the first to lay hands on it, and the late Dr. Huth kept the same plan in mind. I myself then studied a great portion of the work, when other duties called me away from it, with bare chance of the hope of resuming it, but I am convinced I do not err in cherishing the belief that Dr. Beckh is the right man for this task.

B. LAUFER.

CONCEPTS OF PHILOSOPHY. By *Alexander Thomas Ormond*. New York: Macmillan, 1906. Pp. 722.

Professor Ormond, of Princeton University, in this voluminous book, divides his treatment in three parts. Part I, "Analysis" treats first the consciousness as knower. Consciousness itself is undefinable but knows itself in self-knowledge. Self is not picturable but is known immediately, and the cognitive activity is dependent on the emoto-volitional, though it is inseparable from it and underivative. The three modes of determining things are by mathematics, which rests on space, time and number; by physical science, which originates by qualitative change; and by metaphysics which occupies the inner rather than the outer standpoint, and approaches the nature of things

by analogy, taking consciousness as the type of inner nature in general (page 66). Professor Ormond further treats extensively the methods in philosophy, the world of existents, and primary certitude, which latter he distinguishes from validity.

The second part is synthetical and, contrasting the mental and the physical, leads from physics to social life and to the problem of an ultimate unification, the final synthesis in which the world-movements as a whole are conceived as organized and guided by an all-comprehending Thought or Power. This idea culminates with Professor Ormond's postulate of an eternal consciousness as the bearer of purpose of the world-movements as a whole (pp. 333-5). He continues by treating of the ethical activity, the ethical synthesis, emotion and rationality, and religion. Our author further discusses the problem of origin and development, the religious synthesis and philosophical aspect of religion, the individual and the eternal, sin and retribution.

An important chapter in the third part, "Deductions," contains Professor Ormond's treatment of the idea of God (604-626), and also his treatment of the anthropological problem as to the nature of man and his freedom with reference to the character of God as absolute monarch. In a supplementary chapter Professor Ormond says:

"We have in the foregoing discussions endeavored to work out in detail a demonstration of the truth of the claim we have made for philosophy; namely, that its central business is the unification of truth. In the course of this demonstration it has become clear, we are led to hope, that this unity is achieved from one point of view, only in a synthesis of scientific and metaphysical insights and methods, while from another point of view it is reached through a synthesis of knowledge and belief."

We further quote as characteristic of Professor Ormond's view what he has to say on consciousness and its significance which we read in the Appendix:

"The doctrine of the preceding discussions is that consciousness is the great reality as well as the material which supplies the concepts and categories of the real in general. In taking this ground I do not limit consciousness to the cognitive function, or to mere awareness. It is awareness, of course, but it is much more. By consciousness I mean an activity, an energy that becomes aware of itself and its object. The fundamental and central form of consciousness, so conceived, is selfhood. In selfhood its inner nature expresses itself, and in selfhood it becomes the metaphysical subject of those categories which enable us to interpret the world in terms of its inner, and, from any other point of view, hidden nature. There seems to be, in the last analysis, just two alternative views of consciousness that can be regarded as at all rational. The one is that which conceives it as mere awareness and consequently, when logical, reduces it to the position of a mere spectator in the world. The other is the view advocated here; namely, that consciousness is an agent,—in fact the agent of agents,—revealing in its activity the truth and significance of the inner nature of things."

The book is perhaps ponderous for a layman, but the professional philosopher will find much food for thought and will be interested to gain an insight into the teachings of philosophy at Princeton by the successor of the venerable McCosh, whose chair Professor Ormond holds.

LA EVANGELIO SANKTA MATEO lau Dro. Martin Luther. Tradukita en la lingvon internacian Esperanto, de *W. B. Mielck* kaj *Fr. Stephan* kun antauparolo de Lic. Dro. *Alfred Jeremias*. Leipsic: Hinrichs, 1906. Price, 50 pf.

Dr. Alfred Jeremias, a German theologian, well known for his studies in comparative religion, has written the preface to this Esperanto translation of the Gospel of Matthew . He considers that the highest aim of this "Language of Hope" is the spread of the knowledge of Christian enlightenment throughout the world.

The inventor of Volapük, a Roman Catholic clergyman, has been celebrating of late his eightieth birthday. He has seen in his lifetime the rapid progress made by the language of his invention, and must feel some disappointment in seeing it now displaced by another similar attempt made by the Russian Zamenhof. It is not difficult to foretell that Esperanto will share the fate of Volapük. It possesses some advantages to be sure, but upon the whole is subject to the same criticism, and it takes no prophet of great sagacity to predict that it will pass away within about one generation.

As a sample of Esperanto we reprint the Lord's Prayer. The italicized *c* and *g* are written in Esperanto with an inverted double accent which is missing in our type. The italicized *g* is pronounced as "g" in gin, and the italicized *c* as "ch" in church. The insertion of these accented letters (among which are also *h* and *j*) is a typographical objection, which however could be overcome or be easily changed. For rules of the Esperanto language see the editor's notes in *The Monist*, XVI, p. 450.

"Patro nia en la *c*ielo. Via nomo estu sanktigata. Via regno venu. Via volo farig*u* sur la tero, kiel en la *c*ielo. Nian panon *c*iutagan donu al ni hodiau. Kaj pardonu al ni niajn kulpojn, kiel ni pardonas al niaj kulpuloj. Kaj ne konduku nin en tenton, sed savu nin de la malbono. *C*ar via estas la regno, kaj la forto, kaj la gloro en eterneco. Amen."

AN OUTLINE OF THE IDEALISTIC CONSTRUCTION OF EXPERIENCE. By *J. B. Baillie*. London: Macmillan, 1906. Pp. 344. Price, $2.75 net.

Professor Baillie of the University of Aberdeen, in Scotland, known in the philosophical world as the author of *Hegel's Logic*, here presents us with an outline of his own "idealistic construction of experience." He yields to the modern scientific tendency so much as to recognize experience, but sees in the construction which the mind has to make of the data of experience the most essential part of philosophy. The truths of common sense or science are valid so far as they go, but are one-sided in character. Our author explains in this book how far they are so. He insists that experience is a living process and sums up the demands of philosophy thus:

"A complete idealistic explanation of experience ought therefore to show (1) that each phase of experience embodies in a specific way the one spiritual principle animating all; (2) that each is distinct from every other simply by the way it embodies that principle; (3) that each is connected with the others and so with the whole in virtue of its realizing that principle with a certain degree of completeness; (4) that the whole of experience is a necessary evolution of the one principle of experience through various forms,

logically connected as a series of stages manifesting a single principle from beginning to end. Such an explanation must have the character of developmental construction. The attempt is made in the following chapters to expound the idealistic argument from this point of view."

After an introduction in which he discusses the idea of validity and fact and kindred subjects, the book treats the following topics: Dualism and the New Problem, Truth and Experience, Plan and Stages of the Argument, The Interpretation of Sense-Experience, and of Perceptual Experience, Understanding and the World of Noumena and Phenomena, Self-Conscious Experience, The Sphere of Reason—Scientific Experience, The Sphere of Finite Spirit—Moral Experience, The Sphere of Absolute Spirit—Religious Experience and Contemplation.

The religious problem receives the full attention of our author, and he discusses the three spiritual factors of revealed religion in faith, hope and love, but in addition he would give to contemplation a recognized place. Near the end of the book he says:

"While Religion is certainly the most general way in which Absolute Spirit is realized in experience, it is not the only form in which its nature can be revealed. The Life of Spirit for its own sake, Spirit self-complete and self-contained, is experienced, though doubtless by a limited number of mankind, in the mood of Contemplation, Philosophical or Artistic.....In Contemplation as well as in Religion we have the realization of a spiritual world complete and self-contained, where man's spirit works with a sense of freedom only possible when it is consciously one with the very life of Absolute Spirit. Hence the claim of knowledge to attain to Absolute Knowledge or Philosophy is in itself perfectly valid.....The culmination of an Absolute Idealism is the justification of the idealistic position itself, as the ultimate form of knowledge."

UEBER DIE VERERBUNG ERWORBENER EIGENSCHAFTEN. Hypothese einer Zentroepigenese. Von *Eugenio Rignano*. Leipsic: Engelmann, 1907. Pages 399. Price, paper, 5 m.

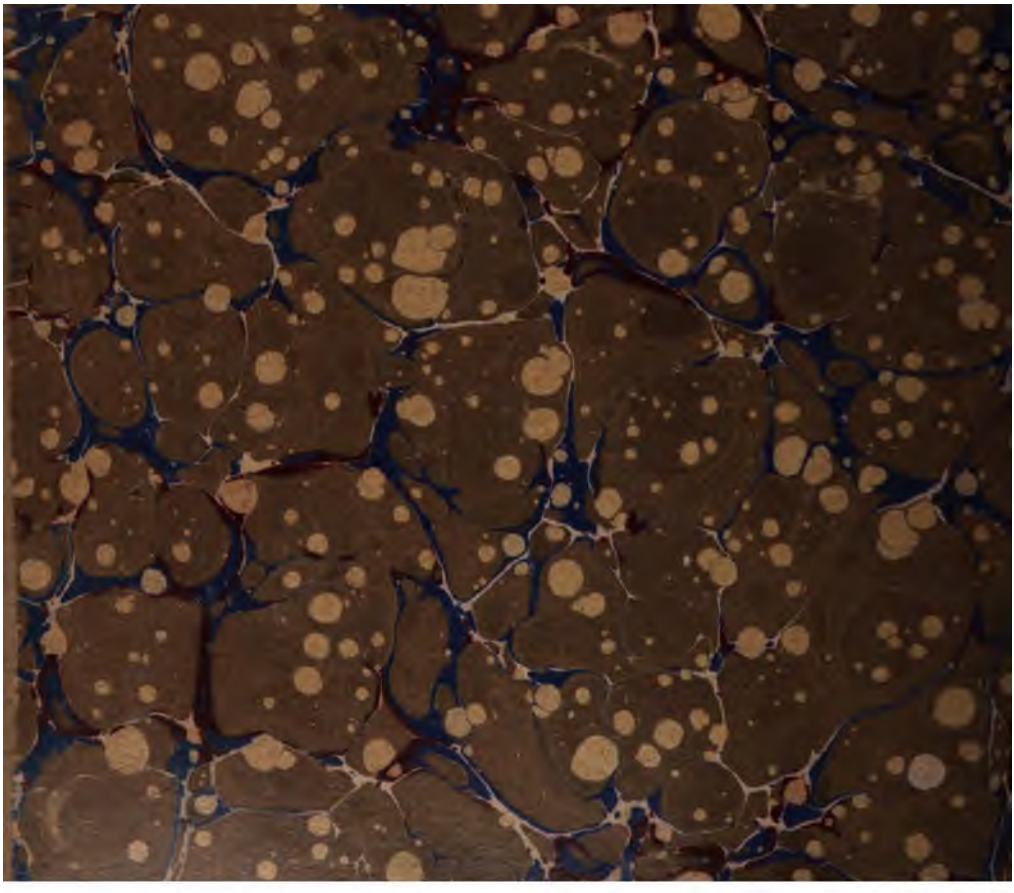
The subject of heredity of acquired characteristics becomes of vital interest not only in the technical study of biology but in the broader fields of scientific philosophy in general, because of its universality and its bearing on the development of races and even sociology as well. Mr. Rignano has made use of the wealth of material furnished by biologists and naturalists for the purpose of throwing some light on this question which constantly evades solution and in which as a scientific man, though not a specialist, he is vitally interested. In his earliest philosophical and sociological investigations he was inclined to favor Weismann's theory of non-heredity of acquired characteristics although he had formed no distinct opinion on the subject, but he never lost sight of the fact that natural selection was not sufficient to completely explain phylogenetic evolution, and was always convinced that non-heredity was contrary to the biogenetic hypothesis at which he finally arrived by induction. He realizes that in the present transitional state of biological science all that can be expected of any hypothesis is to turn the line of research into a somewhat different channel, and this he believes is accomplished by this new

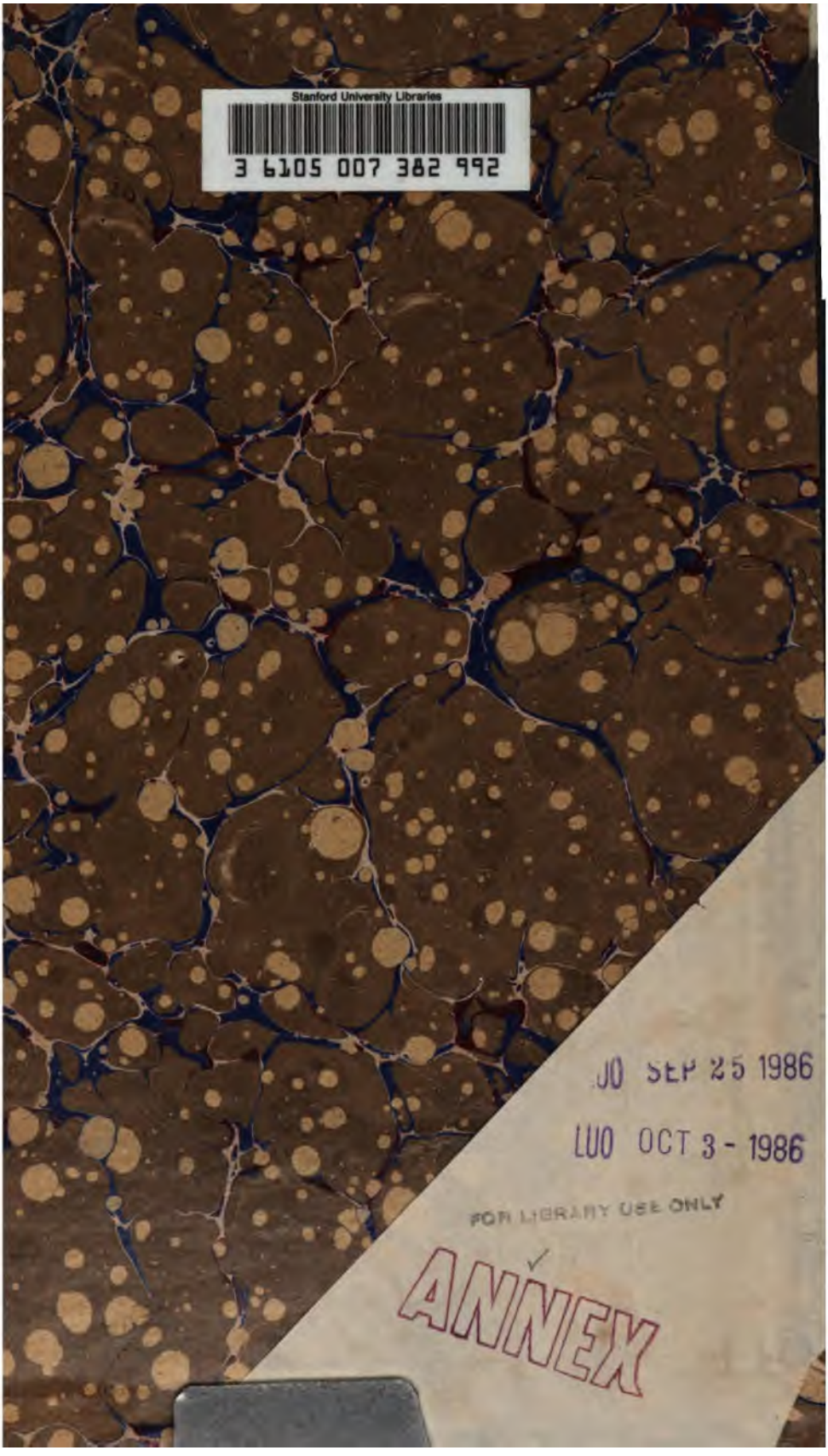
biogenetic hypothesis which he herewith submits to the judgment of biologists and positivistic philosophers alike. The first chapter describes briefly the inductive method used by the author to arrive at his hypothesis from the principle of biogenesis. In the next three chapters are gathered together systematically in as compact a form as possible all the facts which best explain and demonstrate the new hypothesis confirming it directly or indirectly by deduction. After briefly considering in the fifth chapter the question of the heredity or non-heredity of acquired characteristics, the sixth chapter discusses critically the most important theories of biogenesis which are held to-day, not only to show its inadequacy but much rather in order that the knowledge of the principles of this inadequacy might contribute to the discovery of the necessary conditions which every theory requires and which this heredity is thought to explain. In the seventh chapter the author enters upon the demonstration of his hypothesis which up to this time had given place to the discussion of the reality and unreality of the heredity of acquired characteristics. Finally in the last chapter he undertakes to represent how this elementary hypothesis upon which the new biogenetic theory is based, explains memory as well as the most important characteristics of the phenomena of life in general. Therefore he considers that this elementary hypothetical phenomenon comprehends within itself, not only biogenetic phenomena, but even all phenomena of life in the broadest sense of the word, and refers them to a single point of departure. Because the heredity of acquired characteristics is one of the most vital questions of positive philosophy in Comte's sense, or of scientific philosophy, the author flatters himself that he will not be considered as an interloper by biologists and naturalists, and expresses himself as hoping that he may count upon their forbearance in consideration of the great difficulties which he had to encounter in a line wherein he was no specialist, although he himself is particularly aware of the many shortcomings of his work.

L'INDIVIDU L'ASSOCIATION ET L'ÉTAT. Par *Eugène Fournière*. Paris: Alcan, 1907. Pp. 260. Price, 6 fr. bound.

In this new work the author of *An Essay on Individualism*, assisted by a careful study of documents and records, undertakes to prove that in modern society, association is the only means of liberty for the individual as it is the only means of equality between individuals. He proves by numerous and decisive facts that democracy is brought about by association, and is also transformed by it in depriving tyranny of all the evil characteristics with which it may be reproached. According to the author socialism, too, is modified to an important extent by this phenomenon, gaining strength by association not only in its modes of activity but even more perhaps in its teachings.

LINNEY

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